

**Appendix Y**  
**Biological Resources Technical Report**



# **R E P O R T**

## **BIOLOGICAL RESOURCES TECHNICAL REPORT FOR THE SOLAR ONE SOLAR POWER GENERATING FACILITY, SAN BERNARDINO COUNTY, CALIFORNIA**

*Prepared for*

Stirling Energy Systems

URS Project No. 27658110.04060

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# TABLE OF CONTENTS

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<b>Executive Summary .....</b>	<b>ES-1</b>
<b>Section 1     Introduction .....</b>	<b>2-1</b>
1.1     Project Description .....	2-1
<b>Section 2     Environmental Setting .....</b>	<b>2-1</b>
2.1     Project Setting.....	2-1
2.2     Field Survey Methodology .....	2-2
<b>Section 3     Field Survey Results.....</b>	<b>3-1</b>
3.1     Vegetation.....	3-1
3.2     Wildlife .....	3-2
3.3     Special Status Plant Species .....	3-3
3.4     Special Status Wildlife Species .....	3-4
3.5     Wildlife Corridors.....	3-8
3.6     Potential Waters of the United States/State Jurisdictional Waters .....	3-9
<b>Section 4     Impacts .....</b>	<b>4-1</b>
4.1     Impacts.....	4-1
<b>Section 5     Mitigation and Monitoring .....</b>	<b>5-1</b>
5.1     Construction Monitoring and Vegetation Clearing.....	5-1
5.2     Focused Mitigation .....	5-1
<b>Section 6     References .....</b>	<b>6-1</b>

## List of Tables, Figures and Appendices

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### Tables

Table 1	Vegetation Communities Occurring within the Solar One AFC Project Boundary
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### Figures

Figure 1	Regional Map of Project Area
Figure 2	Vegetation Map
Figure 3	CNDDDB Data and Designated Critical Habitat in the Project Vicinity
Figure 4	Special Status Species Detected During URS Surveys
Figure 5	Summary of Patterns of Desert Tortoise Occupation
Figure 6	Bighorn Sheep Habitat
Figure 7	Regional Context

### Appendices

Appendix A	Survey Dates and Personnel for the Solar One Project
Appendix B	Special Status Species Potentially Occurring in the Vicinity of the Solar One Project
Appendix C	Site Photographs
Appendix D	Wildlife Species List
Appendix E	Plant Species List
Appendix F	California Natural Diversity Database (CNDDDB) Data and Field Survey Forms
Appendix G	Biologists' Qualifications
Appendix H	Desert Tortoise Data Forms

## **EXECUTIVE SUMMARY**

This section analyzes potential effects that the SES Solar One, LLC (Solar One or Applicant) Project and its ancillary systems (Project) may have on biological resources located within the Project Site. The existing biological resources within the Project Area and within a 1000-foot radius around the site as well as within a 100-foot buffer of the proposed 30-foot-wide temporary access road are discussed in this section. Additional evaluation one mile beyond the Project boundary was conducted along with consideration of other projects in the region. Also, the potential effects on biological resources as a result of the Project are assessed. Figure 1, General Vicinity Map, displays the general topography of the Project Area and vicinity.

In compliance with the California Environmental Quality Act (CEQA), and in support of an Application for Certification (AFC) from the California Energy Commission (CEC), a biological resources baseline survey of the SES Assessment Area (which includes the AFC Assessment Area) and Bureau of Land Management (BLM) Area of Critical Environmental Concern (ACEC) was conducted by URS Corporation (URS). The biological resources assessment included a database review of the California Natural Diversity Database (CNDDDB) and U.S. Fish and Wildlife Service (USFWS) to identify previous biological resource locations in the Project vicinity. Based on the results of the database review, URS biologists conducted vegetation mapping, rare plant surveys, and protocol surveys for special status species known to occur within the vicinity of the AFC Assessment Area as well as in the larger SES Assessment Area and within the BLM ACEC (Figure 2). The AFC Assessment Area is a subset of the larger SES assessment area, which is adjacent to the BLM ACEC Assessment Area (Figure 2). The existing transmission line is the boundary between the SES Assessment Area and the BLM ACEC Assessment Area.

The 8,230-acre AFC Assessment Area and the proposed temporary access road are within the Mojave Desert. These areas support mostly Mojave Desert creosote bush scrub vegetation with lesser amounts desert saltbush scrub, un-vegetated areas on steep rocky slopes, and developed/disturbed areas. The Project Site has a history of cattle grazing, as evidenced by fencing and watering stations that can be found scattered within the Project Site. The Project Site is also in a location that has a history of past mining operations and claim filings. These active land uses have resulted in the area being disturbed in limited areas. In addition, the site has been used by off-road vehicles (ORV) with several ORV trails traversing the area.

Extensive biological field surveys resulted in the detection of the following special status species:

### Wildlife

American badger (*Taxidea taxus*)

Bendire's thrasher (*Toxostoma bendirei*)

burrowing owl (*Athene cunicularia*)

California horned lark (*Eremophila alpestris actia*)

desert tortoise (*Gopherus agassizii*)

Golden eagle (*Aquila chrysaetos*)

Mojave fringe-toed lizard (*Uma scoparia*)

Swainson's hawk (*Buteo swainsoni*)

### Plants

Emory's crucifixion thorn (*Castela emoryi*)

small-flowered androstephium (*Androstephium breviflorum*)

white-margin beardtongue (*Penstemon albomarginatus*)

Utah vine milkweed (*Funastrum utahense*)

## **SECTION 1 INTRODUCTION**

This Biological Resources Baseline Report has been prepared to support environmental compliance and permitting for the proposed development of a Stirling Energy Systems (SES) solar-powered electric generating facility near Barstow, California, at a site designated as Solar One (collectively referred to herein as the assessment area). The purpose of this Biological Resource Baseline Report is to describe biological resources within the areas of potential effect for the Project Site. This report details the results of special status species protocol and general wildlife surveys, focused special status species surveys, and vegetation mapping conducted in the AFC Assessment Area.

### **1.1 PROJECT DESCRIPTION**

The Project would develop a solar-powered electric generating facility situated approximately 37 miles east of Barstow in San Bernardino County in southern California. The project area is located on land managed by the BLM. A total of approximately 8,230 acres would be included within the fenced site. The AFC Assessment Area boundaries are the Cady Mountains to the north, Newberry Mountains to the west, an existing Southern California Edison (SCE) transmission line to the east, and Interstate-40 (I-40) to the south. The Project Study Area originally included a large area of land east of the transmission line that was in a BLM Area of Critical Environmental Concern (ACEC) and biological surveys were conducted in this additional area. This land east of the transmission line within the ACEC is not part of the currently proposed project.

The Project is also located within the planning area of the proposed West Mojave Coordinated Management Plan (West Mojave Plan or WMP). The proposed WMP designates a total of four Desert Wildlife Management Areas (DWMA), each of which focuses on the protection and conservation of desert tortoise, Mojave ground squirrel (*Spermophilus mohavensis*), and other state- or federally listed special status species that share their habitats. The AFC Assessment Area is not within any DWMA.

**SECTION 2 ENVIRONMENTAL SETTING****2.1 PROJECT SETTING**

The 8,230-acre AFC Assessment Area and the proposed temporary access road are located within the Mojave Desert in an area approximately 37 miles east of Barstow, California. The Mojave Desert is the transitional area between the hotter Sonoran Desert and the cooler and higher elevation Great Basin Desert. This desert is within the rain shadow of the Transverse and Sierra Nevada mountain ranges, and is defined by a specific combination of latitude, elevation, geology, and indicator plant species.

The Mojave Desert is the driest desert in the continental United States with average precipitation ranging from 2.23 to 2.5 inches per year falling primarily between October and March, and temperatures ranging from 40 to 110 degrees Fahrenheit. Perennial rivers and streams are rare, with the Mojave River being the most prominent in the project vicinity. Elevations in the Mojave Desert range from the lowest elevation below sea level at Death Valley to an elevation of 7,929 feet. Plant communities vary with topography, geology, elevation, and precipitation. These include pinion-pine forests and frost-tolerant species above 5,500 feet, where local average precipitation may be as much as 10 inches per year (some of which falls as snow); Joshua tree woodland in the range of 4,000 to 6,000 feet; mixed desert shrub communities in the middle elevation regions and along the mountain range fronts; and creosote bush and other drought-tolerant species in the lower elevation regions where rainfall averages less than 2.5 inches per year (USGS 2004).

Vegetation is dominated by Mojave creosote bush scrub through the rolling terrain with less common and site-specific conditions allowing for saltbush scrub in the southwestern portion of the AFC Assessment Area (Figure 2). Developments in this area include the Burlington Northern Santa Fe (BNSF) railway, a maintained dirt north-south access road for the existing transmission line on the eastern border of the assessment area, which connects to the existing Pisgah substation south of the site, and several east-west dirt roads that cross the site. The past land uses within the assessment area include a history of cattle grazing and limited mining, and some current disturbance from ORV activities.

A search of the California Natural Diversity Database (CNDDB) (2008) revealed several previously documented special status species occurring in the Project vicinity within a 10-mile radius of the Project boundary (Figure 3). Special status species documented by CNDDB within the 10-mile radius included plants such as Emory's crucifixion thorn and white-margined beardtongue, and wildlife such as desert tortoise, Mojave fringe-toed lizard, and Nelson's bighorn sheep (*Ovis canadensis nelsoni*). A complete list of special status species with the potential to occur in the Project Study Area can be found in Appendix B.

The assessment area is not included within an area designated as Critical Habitat for a listed species (Figure 3); however, the southwest corner of the Project site is just north of U.S. Fish and Wildlife Service (USFWS) Designated Critical Habitat for desert tortoise that is located south of I-40 (Figure 3). The BLM has designated the Pisgah ACEC for known populations of white-margined beardtongue and Mojave fringed-toed lizard in the area east of the transmission line corridor. North of the assessment area, the BLM has proposed an area for designation as wilderness. The assessment area is included in the West Mojave Plan (BLM 2006, as amended).

## **2.2 FIELD SURVEY METHODOLOGY**

In March 2007, URS biologists conducted a habitat assessment to characterize the vegetation within the AFC Assessment Area and vicinity to determine the suitability of the habitats for special status species. Historically, the BLM had designated the project vicinity as Category 2 habitat (of 3 Categories) for the desert tortoise, although this designation is no longer used by BLM. The goal of Category 2 lands was to maintain stable, viable populations of desert tortoise.

From March 19, 2007 through May 11, 2007, URS biologists conducted vegetation assessments and special status plant surveys within the project area. To conduct the surveys, the entire project area was divided up into 240-acre cells. A team of two biologists surveyed two cells per day. Within each cell, a list of all plants species was made by each biologist. If terrain was steep or rocky or if there was more diversity to be recorded, extra field time was allocated. Because of poor conditions for surveying for rare plants during the 2007 field season, special status plant surveys were repeated and expanded in 2008 to include areas south of the railroad and the BLM ACEC east of the existing transmission line. These surveys were conducted from March 10, 2008 through May 10, 2008 using the same methods as in 2007.

Desert tortoise surveys were conducted in the project area from May 15, 2007 through May 31, 2007 and from April 1, 2008 through May 7, 2008. Sample plot presence-absence surveys were conducted according to the USFWS Field Survey Protocol for a Non-federal Action that may occur within the range of desert tortoise (USFWS 1992). A sampling approach, approved by the BLM, was implemented because 100 percent coverage over such a large area was deemed impractical. Within each 240-acre grid cell, a sample plot that was eighty (80) acres in size (an area that one trained biologist can adequately survey in a single day) was established (Figure 4). Each pair of biologists surveyed two 80-acre sample plots each day. Applying a 33 percent sampling rate, the AFC Assessment Area included 53 eighty-acre sample plots for the desert tortoise protocol surveys. Approximately 4,240 acres of the AFC Assessment Area were surveyed using the 30-foot transect survey protocol. The sample plots included a perimeter buffer area required by CEC guidelines. Selection of the sample plots was spatially even with plot locations sited without bias toward habitat type or elevation (Figure 4). The biologists were trained in the desert tortoise 30-foot transect survey protocol. Locations of tortoise sign, burrows, and live tortoise within each sample plot were recorded with consumer-grade GPS units (10-15 foot accuracy). Photographs of live desert tortoise were taken and data including size and health of the tortoise, condition of its burrow if present, and habitat the tortoise was found in were recorded for each tortoise sighting. Care was taken to avoid disturbing detected tortoises. Incidental observations of tortoise and other wildlife species and sign were also recorded during all field efforts. Other wildlife species were identified using scat, tracks, burrows, vocalizations, or direct observations with the aid of binoculars.

From June 2, 2008 through June 6, 2008 URS biologists conducted surveys for Mojave fringe-toed lizard (MFTL) in the project area. MFTL suitable habitat (*i.e.*, areas of fine wind-blown sand) was mapped within the SES Assessment Area and BLM ACEC prior to the MFTL surveys. During the focused survey, teams of biologists spaced at 15-foot intervals surveyed 100 percent of the areas supporting suitable MFTL habitat (Figure 4). Areas of potential habitat were examined for lizards, and any detected lizards were recorded with consumer-grade GPS units and photographed when possible. Habitat type, vegetation, weather conditions, and incidental observations of other wildlife species were also recorded during these surveys.

Focused biological surveys for several species of special status plants and burrowing owl were also conducted in 2008. During the field surveys, the AFC Assessment Area was surveyed on foot, and all areas were visible from the survey routes. In compliance with CEC regulations, habitat within a one mile buffer surrounding the AFC Assessment Area was also qualitatively assessed for biological resources.

When a special status plant species, desert tortoise, or other important biological resource was located during the special status plant surveys, its location was documented with the aid of consumer-grade GPS units (10-15 foot accuracy) and imported to a GIS database for display on 1-inch = 200 feet rectified 2005 aerial photographs. Digital photographs were also taken of important biological resources and habitats. Data for various resource areas are not disclosed for some private land parcels due a lack of specific private landowner consent for parcel specific disclosure of data.

### **2.2.1 Waters of the U.S.**

Major drainages on-site were evaluated to determine whether or not they would be considered under state or federal jurisdiction. The Project Study Area may have the potential to contain waters of the U.S. consisting of non-wetland other waters of the U.S. subject to jurisdiction pursuant to Section 404 of the Federal Clean Water Act. Waters of the U.S. were evaluated based on the presence of an ordinary high water mark (OHWM) or the boundary of adjacent wetlands defining their limits as provided at 33 CFR 328.3 and 328.4.

Guidance from the U.S. Army Corps of Engineers (Corps) (2001), *Final Summary Report: Guidelines for Jurisdictional Determinations for Waters of the United States in the Arid Southwest*, was also used. Guidance of relevance to this delineation includes consideration that:

*“In dryland fluvial systems typical of the desert areas, the most common physical characteristics indicating the OHWM for a channel usually include, but are not limited to: a clear natural scour line impressed on the bank; recent bank erosion; destruction of native terrestrial vegetation; and the presence of litter and debris. For many small desert wash systems, the presence of continuous well-developed upland vegetation in the stream channel is a good indicator that it only conveys surface flow during extremely large storm events and, as a result, would not usually constitute a jurisdictional water of the United States.”*

This guidance has been further elaborated by the Corps (2004 and 2008a), and that elaboration is implemented herein. The potential for Federal wetlands was evaluated based on the presence of wetland hydrology, wetland vegetation, and hydric soils pursuant to guidance from the Federal Manual for Delineating Wetlands (Corps 1987) as augmented by the Corps (2008b). The project area does not exhibit features demonstrative of wetland hydrology, wetland vegetation, and/or hydric soils, so no wetland data points were selected and no wetland datasheets were recorded.

#### **2.2.1.1 Lakes and Streambeds**

Areas subject to jurisdiction pursuant to Section 1600 of the California Fish and Game Code were delineated. Section 1602(a) describes areas subject to its jurisdiction within the following text:



*1602 (a) An entity may not substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake, unless all of the following occur...*

Section 1602(a) is based on Title 14 CCR 720:

*For the purpose of implementing Sections 1601 and 1603 of the Fish and Game Code which requires submission to the department of general plans sufficient to indicate the nature of a project for construction by or on behalf of any person, governmental agency, state or local, and any public utility, of any project which will divert, obstruct or change the natural flow or bed of any river, stream or lake designated by the department, or will use material from the streambeds designated by the department, all rivers, streams, lakes, and streambeds in the State of California, including all rivers, streams and streambeds which may have intermittent flows of water, are hereby designated for such purpose.*

Streams, including creeks and rivers, are defined at Title 14 CCR 1.72 as:

*A stream is a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation.*

Lakes are defined at Title 14 CCR 1.56 as:

*Lakes: Includes natural lakes or man-made reservoirs.*

URS understands that these State regulations define the jurisdiction of the California Department of Fish and Game (CDFG) for the purpose of administering Section 1600 of the Fish and Game Code as within the bed, bank, and channel of stream, including intermittent streams, which are equivalent to the areas within the ordinary high water mark (OHWM) of a stream or watercourse. URS also understands that the California Department of Fish and Game routinely asserts jurisdiction on areas that may be adjacent to a stream with an OHWM that demonstrate: a dominance of hydrophytic vegetation, hydric soils, and/or wetland hydrology. Therefore, URS has evaluated such conditions as potentially subject to CDFG jurisdiction.

### **2.2.1.2 Waters of the State**

Waters of the State include surface and ground waters pursuant to the Porter Cologne Water Quality Control Act. The following definitions of waters of the State and related items from Porter Cologne (§13050 Definitions) used in this report include:

(d) “Waste” includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing,

or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal.

(e) “Waters of the state” means any surface water or groundwater, including saline waters, within the boundaries of the state.

(f) “Beneficial uses” of the waters of the state that may be protected against quality degradation include, but are not limited to, domestic, municipal, agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves.

(g) “Quality of the water” refers to chemical, physical, biological, bacteriological, radiological, and other properties and characteristics of water that affect its use.

(h) “Water quality objectives” means the limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area.

(k) “Contamination” means an impairment of the quality of the waters of the state by waste to a degree that creates a hazard to the public health through poisoning or through the spread of disease. “Contamination” includes any equivalent effect resulting from the disposal of waste, whether or not waters of the state are affected.

(l)(1) “Pollution” means an alteration of the quality of the waters of the state by waste to a degree that unreasonably affects either of the following:

(A) The waters for beneficial uses.

(B) Facilities which serve these beneficial uses.

(2) “Pollution” may include “contamination.”

Additionally, potential beneficial uses that may occur on-site have been evaluated.

## SECTION 3 FIELD SURVEY RESULTS

## 3.1 VEGETATION

The 8,230-acre AFC Assessment Area, including a 1000-foot buffer surrounding the project boundary and a 100-foot buffer along the proposed temporary access road, is located in gently sloping, open desert scrub with a few sandy alluvial fans eroding down from the steep rocky hills associated with the Cady Mountains) to the north and east. Vegetation is composed primarily of Mojave Desert creosote bush scrub with a smaller area of desert saltbush scrub as defined by the Holland (1986) classification of plant communities. Disturbed areas are associated with dirt roads and trails, areas adjacent to railroads and the interstate highway, along underground pipeline routes, and cleared areas from past land uses (*e.g.*, mining). A one-mile buffer around the site is least disturbed farthest away from the highway, railroads, and other permanent developments.

The AFC Assessment Area supports five distinct vegetation communities. These vegetation communities were digitized and are displayed on aerial photographic maps (Figure 2). Each habitat description follows the Holland vegetation classification (Holland 1986). A complete list of all plants detected during 2007 and 2008 surveys is provided in Appendix E. Table 1, Vegetation Communities Occurring within the Solar One Project Boundary, shows the estimated acreages of existing vegetation communities for areas within the Project Site boundary.

**Table 1**  
**Vegetation Communities Occurring within the Solar One AFC Project Boundary**

Community Name	Holland Code	AFC Assessment Area Acreage	Temporary Access Road Acreage*
Developed	12000	24.0	34.4
Desert Saltbush Scrub	36110	237.3	0.0
Disturbed Mojave Creosote Bush Scrub	34100	88.6	14.4
Mojave Creosote Bush Scrub	34100	7812.5	20.8
Un-Vegetated Habitat	13000	67.6	0.0
Total		8,230.0	69.6
Note: * Temporary Access Road Acreage includes the 100-foot buffer.			

**Developed**

Developed lands (Holland Code 12000) include roads, built structures, and associated infrastructure. Within the Project area, these included dirt roads, transmission lines, underground gas pipelines, railroads, and any other built environments. Developed areas occurred in approximately 24.0 acres of the AFC Assessment Area, 34.4 acres of the proposed temporary access road, and 330.5 of the 1000-foot buffer of the AFC Assessment Area.

**Desert Saltbush Scrub**

Desert saltbush scrub (Holland Code 36110) is a low, sparse mixture of micophyllous shrubs and occasional succulent species. Stands of shrubs are usually widely spaced and are strongly dominated by desert saltbush (*Atriplex polycarpa*). Other species include white burrobush (*Hymenoclea salsola*), and inkweed (*Suaeda moquinii*). This habitat usually forms on fine-textured, poorly draining soils with high alkalinity and salinity, usually surrounding playas on elevated ground. Desert saltbush scrub is only found in the southwestern corner of the AFC Assessment Area (237.3 acres) in association with small patches of Mojave creosote bush scrub. No desert saltbush scrub is present along the proposed temporary access road. In addition, approximately 289.1 acres of desert saltbush scrub occurs in the 1000-foot buffer of the AFC Assessment Area.

**Mojave Creosote Bush Scrub**

Mojave creosote bush scrub (Holland Code 34100) is a community dominated by creosote bush (*Larrea tridentata*) and white bur-sage (*Ambrosia dumosa*). Shrubs are typically widely spaced with bare ground between them. A diverse annual herb layer may flower in late March and April with sufficient winter rains. Other common plant species in this habitat include smoke tree (*Senna armata*), Nevada ephedra (*Ephedra nevadensis*), white burrobush, encelia (*Encelia* spp.), ratany (*Krameria* spp.), and various cactus species (e.g., *Opuntia* spp.). This plant community is usually found on well-drained secondary soils with very low water-holding capacity on slopes, fans, and valleys. This vegetation type makes up the majority of the acreage within the AFC Assessment Area boundaries (7,812.5 acres undisturbed and 88.6 acres disturbed). Approximately 20.8 acres of undisturbed and 14.4 acres of disturbed Mojave creosote bush scrub occur within the 100-foot buffer of the proposed temporary access road.

**Un-Vegetated Habitat**

Un-vegetated habitat (Holland Code 13000) occurs on steep rocky slopes that dominate the northeastern boundary of the AFC Assessment Area. Little vegetation is associated with this rocky habitat. A total of 67.6 acres of the un-vegetated habitat occurs along the northern boundary of the AFC Assessment Area.

**3.2 WILDLIFE**

The AFC Assessment Area supports a diverse assemblage of desert wildlife species. A complete list of all wildlife species detected during the 2007 and 2008 surveys are found in Appendix E. Reptiles detected included desert tortoise, Mojave fringe-toed lizard, common side-blotched lizard (*Uta stansburiana*), western whiptail lizard (*Cnemidophorus tigris*), zebratail lizard (*Callisaurus draconoides*), western banded gecko (*Coleonyx variegatus*), Mojave rattlesnake (*Croatalus scutulatus*), and sidewinder (*Crotalus cerastes*).

Common bird species detected in the AFC Assessment Area include common raven (*Corvus corax*), California horned lark (*Eremophila alpestris*), western kingbird (*Tyrannus verticalis*), California thrasher (*Toxostoma redivivum*), black-throated sparrow (*Amphispiza bilineata*), Say's phoebe (*Sayornis saya*) and red-tailed hawk (*Buteo jamaicensis*).

Mammals observed or indirectly detected from scat or tracks include black-tailed jackrabbit (*Lepus californicus*), kit fox (*Vulpes macrotis*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), American badger, and woodrat (*Neotoma sp.*). Rodent tracks and burrows were observed throughout the Project Area.

### **3.3 SPECIAL STATUS PLANT SPECIES**

The AFC Assessment Area supports a variety of common and endemic plants. Four California Native Plant Society (CNPS) listed species are found within the AFC Assessment Area (Figure 5.6-4): small-flowered androstephium, Emory's crucifixion thorn, Utah vine milkweed (*Funastrum utahense*), and white-margined beardtongue. No special status plants were found within the 100-foot buffer of the proposed temporary access road. A complete list of special status plant species known from the project vicinity is provided in Appendix B.

#### ***Small-flowered Androstephium***

Regulatory Status: Federal: None; State: None; CNPS: List 2.3

This member of the Family Liliaceae is relatively rare in California, but is found throughout the western United States. It is often found in undisturbed sandy areas usually in open area lacking large shrubs, often in association with the more common desert lily (*Hesperacaulis undulata*). No small-flowered androstephium were detected during the 2007 survey season, likely due in part to a low rain year. During the 2008 season, there were 52 observations of this species scattered throughout the AFC Assessment Area and 14 observations within the 1000-foot buffer of the AFC Assessment Area (Figure 4).

#### ***Emory's Crucifixion Thorn***

Regulatory Status: Federal: None; State: None; CNPS: List 2.3

This deciduous shrub is found throughout the Mojave and Sonoran deserts and is typically found in dry washes. This species generally occurs in low abundance, blooming from June to July. One specimen of Emory's crucifixion thorn was found within the north-central portion of the AFC Assessment Area in 2008 (Figure 4). No seedlings for crucifixion thorn were observed during the 2007 season.

#### ***White-margined Beardtongue***

Regulatory Status: Federal: None; State: None; CNPS: List 1B.2

This species is known only from four locations within California, with the nearby Pisgah Crater and adjacent BLM ACEC being one of these populations. White-margined beardtongue is typically found in open sandy soils that are not regularly disturbed. No white-margined beardtongue were detected during the 2007 surveys (a year with very low recorded rainfall in this area). A total of 22 locations of white-margined beardtongue were detected during the 2008 season. All plants were found growing at higher elevation areas that are not subject to severe flooding.

***Utah Vine Milkweed***

Regulatory Status: Federal: None; State: None; CNPS: List 4.3

Utah vine milkweed is a perennial herb that is native to western North America. There are no known observations in the CNDDB (CDFG 2008). This species is uncommon and found in dry, sandy or gravelly areas in the Mojave Desert at elevations of less than 1000 meters. The blooming period for this species occurs from April until June. A single individual was observed in 2008; none were observed in 2007. This individual was observed south of the railroad and north of I-40 (Figure 4).

**3.4 SPECIAL STATUS WILDLIFE SPECIES**

A total of seven special status wildlife species were detected in the AFC Assessment Area during the surveys: desert tortoise, Mojave fringe-toed lizard, California horned lark, Bendire's thrasher, burrowing owl, golden eagle (*Aquila chrysaetos*), and Swainson's hawk (*Buteo swainsoni*). The following species accounts are provided for the special status wildlife species detected on-site. No special status wildlife species were found within the 100-foot buffer of the proposed temporary access road. A listing of other special management status species known from the Project vicinity is provided in Appendix B.

***Desert Tortoise***

Regulatory Status: Federal: USFWS: Threatened; State: CDFG: Threatened

Desert tortoise is widely distributed in the deserts of California, southern Nevada, extreme southwestern Utah, western and southern Arizona, and throughout most of Sonora, Mexico. Desert tortoise populations are declining due to various factors including the spread of a fatal respiratory disease, increases in raven populations that prey on juvenile tortoises, and habitat loss and degradation due to various extensive and intensive land uses. Only the Mojave population is Federal- and State-listed as threatened. Typical tortoise habitat consists of firm but not hard ground - usually soft sandy loams and loamy sands - to allow for burrow construction (Karl 1983). Desert tortoise mostly occur in four subpopulations in the California Mojave Desert (Ord-Rodman, Superior-Cronese, Fremont-Kramer, and Joshua Tree DWMAs) and outside of these areas tortoise tend to occur in at much lower densities. This species is mostly found in creosote bush scrub, with lower densities occurring in Joshua tree woodland and saltbush scrub. The topography where this species is typically found includes flats, low valleys, bajadas, and low hills between 2,000 and 3,300 feet and occasionally above 4,100 feet.

The diet of desert tortoise consists mainly of annual plants and grasses, but also perennial plants such as cacti and native forbs when available, certain non-native plant species are also eaten (West Mojave Planning Team 1999). Desert tortoise are most active when plants are available for forage or when pooled water is available for drinking, usually March through early June and again between September and early November (Marlow 1979). They typically have home ranges from 27-131 acres (Berry 1986). Individuals commonly traverse 1,476-2,624 feet/day within their home range, and males have been recorded to travel up to 0.62 miles within their home range. Mojave desert tortoise are also known to disperse more extended distances (1.9 miles in 16 days and 4.5 miles in 15 months; Berry 1986).

Desert tortoise sign and burrows were detected throughout the Project area, with 5 live desert tortoises and 1 active burrow detected within the AFC Assessment Area during the focused desert tortoise surveys (Figure 4). During other field efforts within the AFC Assessment Area, an additional 13 live desert tortoises were incidentally detected along with 8 active burrows. The total number of desert tortoise and active burrows found in the larger SES Assessment Area during desert tortoise focused surveys was 17 and 6, respectively, with 24 live desert tortoise and 13 active burrows incidentally detected during other field efforts. The total number of desert tortoise and active burrows found in the BLM ACEC during focused surveys was 11 and 9, respectively, and an additional 5 live tortoise and 1 active burrow found incidentally during other field efforts.

A total of 15 of the 53 sample plots surveyed within the AFC Assessment Area during focused desert tortoise surveys had tortoise or tortoise sign recorded. The distribution of tortoise and tortoise sign was not random and tended to be concentrated in the north-central portion of the SES Assessment Area (Figure 5). Approximately 56 percent (7,441 acres) of the entire surveyed area (13,200 acres) was confirmed as being occupied by tortoise within the AFC Assessment Area Project boundary. Additionally, 11 percent (1,440 acres) of the 1000-ft buffer around the AFC Assessment Area was confirmed to be occupied desert tortoise habitat.

The majority of the AFC Assessment Area is considered suitable for desert tortoise. Based on sample plot coverage (33%) and typical tortoise detectability (55-68%; Nussear et. al., 2008), the SES Assessment Area likely supports between 70 and 127 desert tortoise (Figure 5). The adjacent BLM ACEC area likely supports between 61 and 111 desert tortoise based on the results of the protocol surveys. Additional desert tortoise may occur in areas where no tortoise or tortoise sign were detected, although presumably at much lower densities than the cells where tortoise and tortoise sign were actually detected.

### ***Mojave Fringe-toed Lizard***

Regulatory Status: Federal: BLM: Sensitive; State: CDFG: Species of Special Concern

Mojave fringe-toed lizard (MFTL) inhabits areas of fine windblown sand in the Mojave Desert from the southern end of Death Valley south to the Colorado River around Blythe, and into extreme western Arizona. Suitable habitat includes sparsely-vegetated arid areas with fine wind-blown sand, including dunes, flats with sandy hummocks formed around the bases of vegetation, washes, and the banks of rivers. Mojave fringe-toed lizards require fine, loose sand for burrowing. The elevation range for this species is approximately 300 to 3,000 feet (Stebbins 2003). Adults go underground in the sand or in a burrow in the fall, and emerge in late winter. Young lizards may go underground later and emerge earlier, or may remain active all year. Their diet consists primarily of small invertebrates such as ants, beetles, and grasshoppers, along with occasional blossoms, leaves, and seeds. Clutches of one to five eggs are laid from May to July.

Observations of this species were associated with the sandy areas within both the SES Assessment Area and the BLM ACEC during 2008 surveys (Figure 4). The AFC Assessment Area supports one patch of MFTL occupied habitat between the railroad and I-40. Most of the MFTL observations were found within the BLM ACEC, supporting up to five locations of occupied MFTL habitat. One location occurs in the northwestern portion of the SES Assessment Area.

***California Horned Lark***

Regulatory Status: Federal: None; State: CDFG: Watch List

This subspecies has a patchy distribution, and occurs in deserts, grasslands, and other open, flat areas. California horned larks are known to colonize areas graded for development, disappearing when construction begins. California horned larks are typically found walking along the ground, searching for food in the form of insects, snails, and spiders during the breeding season; adding grass and forb seeds and other plant matter to their diet at other seasons. Nests are placed on the ground, and nesting occurs in April with fledglings appearing from May to July. After breeding, they become very gregarious; often forming large flocks that forage and roost together. California horned lark were observed consistently throughout the assessment areas during the 2007 and 2008 surveys.

***Bendire's Thrasher***

Regulatory Status: Federal: BLM: Sensitive, USFWS: Birds of Conservation Concern;  
State: CDFG: Species of Special Concern

Bendire's thrasher is found in the southwestern U.S. and northwestern Mexico, from southern Nevada, southern Utah and southwestern Colorado south to central Sonora in Mexico. Within this range, its distribution is patchy and in some cases poorly known (BirdLife International 2008). Individuals in the northern portion of the range migrate south in the winter and overlap with southern residents (BirdLife International 2008). Breeding individuals favor relatively open grassland, shrubland or woodland with scattered shrubs or trees; Bendire's thrasher is not found in dense vegetation. It forages primarily on the ground for insects and other arthropods, but will also eat seeds and berries (BirdLife International 2008). In the Mojave desert, migration begins as soon as breeding finishes and all birds have left the breeding grounds by late August (BirdLife International 2008). There were no observations made in 2007 or 2008 within the AFC Assessment Area, though Bendire's thrasher was seen in an adjacent area within the SES Assessment Area.

***Burrowing Owl***

Regulatory Status: Federal: BLM: Sensitive, USFWS: Birds of Conservation Concern;  
State: CDFG: Species of Special Concern (burrow sites)

The burrowing owl is a small, ground dwelling bird that inhabits open habitats such as grasslands, agricultural fields, and disturbed areas in the western half of the United States down into Baja California and central Mexico (Johnsgard 1988). Burrowing owls use burrows throughout the year for shelter from weather and predators and for nesting during the breeding season (February 1 to August 31). In Southern California, the most commonly used rodent burrow is that of the California ground squirrel (*Spermophilus beecheyi*). The burrowing owl nesting distribution is strongly correlated to local ground squirrel burrow distribution (Collins 1979). Burrowing owls form short-term pair bonds with male territoriality peaking during pair formation and declining after egg laying. Not all individuals capable of breeding do so every year. Burrowing owls have declined through much of their range because of habitat loss due to urbanization, agricultural conversion, and destruction of ground squirrel colonies (Remsen 1978). The incidental poisoning of burrowing owls and the destruction of their burrows during eradication programs



aimed at rodent colonies has also been a large factor in their decrease (Collins 1979; Remsen 1978; and Zarn 1974). Burrowing owls are relatively tolerant of lower levels of human activity. There were two separate observations made of burrowing owls during the 2008 survey. There were no observations made in 2007. Further investigation would be required to determine whether these owls were migrants or residents since no owl burrows were detected in the survey areas.

### ***Golden Eagle***

Regulatory Status: Federal: BLM: Sensitive, USFWS: Birds of Conservation Concern;  
State: CDFG: Watch List, Fully Protected (nesting and wintering)

Golden eagles are distributed throughout North America (Johnsgard 1990). Golden eagles occur as breeding residents in the western half of the United States and formerly nested in the northeast (Terres 1980; Johnsgard 1990). This species is an uncommon resident throughout California (Zeiner, et al., 1990; Unitt 1984). Golden eagles forage in grassy and open shrubby habitats and nest primarily on cliffs, with secondary use of large trees (*e.g.*, oaks and sycamores). Breeding pairs may occupy territories of several square miles, within which they may often use several nest sites, shifting nest sites from year to year. This species has declined because of loss of foraging and nesting habitat to urban and agricultural development, human persecution (illegal shooting), incidental poisoning of prey species (*e.g.*, ground squirrels and prairie dogs), egg collecting, power line electrocution, and human disturbance at nest sites (Snow 1973; Johnsgard 1990; Scott 1985). Golden eagles were observed during both the 2007 and 2008 survey season. Both observations were fly-overs. There were no nests or breeding activity was observed in the area.

### ***Swainson's Hawk***

Regulatory Status: Federal: USFS: Sensitive, USFWS: Birds of Conservation Concern;  
State: CDFG: Threatened

The Swainson's hawk breeds throughout much of the Rocky Mountains and western Great Plains, from southern Alberta and Saskatchewan to northern Mexico. Its breeding range in California is limited the northern portion of the state. It is most often found in grasslands, shrublands, and agricultural areas, where both open land for foraging and trees for roosting and nesting are available. Ground squirrels, gophers, voles, mice, small birds, lizards, and snakes form the bulk of the hawks' prey. Sometimes they hunt on the ground, lurking near ground squirrel holes until their prey emerges. Declines in Swainson's hawk populations have been reported across much of the species' range over the past 50 years. Loss or degradation of nesting, foraging, wintering, and migration stop-over habitat are among the primary reasons for the decline, but illegal shooting and electrocutions on power lines have also played a role. The hawk's insect diet also makes it especially vulnerable to pesticide poisoning in agricultural fields. There were no observations of Swainson's hawk in 2007 and a single observation (fly-over) in 2008. This species is not expected to breed in the area and is likely a migrant.

### ***American Badger***

Regulatory Status: Federal: None; State: CDFG: Species of Special Concern

The badger is an uncommon resident of level, open areas in grasslands, agricultural areas, and open shrub habitats. It digs large burrows in dry, friable soils and feeds mainly on fossorial mammals (e.g., ground squirrels, gophers, rats, and mice). Badgers are primarily active during the day, but may become nocturnal in close proximity to humans. The home range of male badger has been measured at 1,327-1,549 acres for males and 338-751 acres for females in Utah (Lindzey 1978) and 400-600 acres in Idaho (Messick and Hornocker 1981). Mating occurs in late summer or early fall. Two to three young are born 183-265 days later in March or April (Long 1973). Badgers are known to live at least 11-15 years (Messick and Hornocker 1981). Threats to badgers include urban and agricultural development of habitat and possibly excessive trapping and persistent poisons in prey in some areas (Zeiner, *et. al.*, 1990). There were no badgers observed during the 2007 surveys and a single badger observed in 2008. The single adult badger observed in 2008 was detected in the northeast corner of the AFC Assessment Area.

### ***Nelson's Bighorn Sheep***

Regulatory Status: Federal: BLM: Sensitive, USFS: Sensitive; State: CDFG: Species of Special Concern,

Nelson's bighorn sheep is a subspecies of bighorn sheep that occurs in the Southwest desert regions of the US. They live in semi-open, precipitous terrain with rocky slopes, ridges, and cliffs or canyons. Steep slopes and cliffs are used to escape from predators such as coyotes and cougars. The Nelson subspecies has become well adapted to the desert mountain environment; they are typically found in small bands with little or no permanent water. Their diet consists of grasses, forbs, and sedges. The species is polygamous; the dominant ram does most of the courting and mating. Mating may take place at anytime in the desert if climatic conditions are suitable. The gestation period is approximately 180 days. These animals began their decline in the mid-1800s at the time of heavy human settlement of the West (SNMNH, 2008). This can be attributed at least in part to degradation of their habitat due to development, road-building, water-management practices, and recreational activities. The bighorns have also been affected by disease, sometimes passed on to them by domestic sheep, and are often preyed upon by mountain lions and probably by domestic dogs as well. In some places where bighorn populations have gone extinct, new herds have been reintroduced, but many parts of their original range are no longer suitable (SNMNH, 2008). The Cady Mountains is an actively managed for big horn sheep (G. Thomas, pers. comm. 2008). No Nelson's bighorn sheep were observed during the 2007 or 2008 surveys, however, approximately 458.3 acres of suitable habitat reported as being utilized by big horn sheep exists along the steep rocky slopes at the northeast boundary of the AFC Assessment Area with an additional 404.5 acres of suitable habitat within the 1000-foot buffer of the AFC Assessment Area (Figure 6).

## **3.5 WILDLIFE CORRIDORS**

A wildlife corridor is defined as a linear landscape feature that allows animal movement between two patches of habitat or between occupied habitat and geographically discrete resources (e.g., water). To function effectively, a corridor must accomplish two basic functions. First, it must effectively link two or more large patches of habitat. The corridor must conduct animals through the landscape to areas of suitable habitat without excessive risk of directing them to unsuitable areas where risk of mortality may be very high. Second, the corridor must be suitable to the focal target species so that they will use the corridor frequently enough to achieve the desired demographic and genetic exchange between populations. Presence of wildlife corridors allow an exchange of individuals between populations,

lowering inbreeding within populations, increasing effective population size, and facilitating re-establishment of populations that have been decimated or eliminated due to random events.

Corridors are often defined by their use by focal species. Focal species are those species that naturally occur in low densities and that may be unwilling or unable to cross extensive areas of development or otherwise unfavorable habitat. Animals have a natural aversion to situations or physical settings they perceive to be dangerous and will often shy away from situations in which they are exposed without cover or escape routes. The presence of disturbance outside of the animal's normal experience is also a situation that is often avoided by animals. In the Mojave Desert, potential focal species for wildlife movement assessment could include mountain lion (*Felis concolor*), coyote (*Canis latrans*), bighorn sheep, bobcat (*Lynx rufus*), and kit fox (*Vulpes macrotis*).

Generally, the project site and surrounding vicinity is unrestricted and conducive to live-in habitat and movement of wildlife throughout the area. The SES Assessment Area and the BLM ACEC consist of large areas of generally undisturbed habitat. The primary constraints to wildlife movement are the railroad and Interstate 40, especially for smaller terrestrial species such as reptiles and small mammals.

### **3.6 POTENTIAL WATERS OF THE UNITED STATES/STATE JURISDICTIONAL WATERS**

This section describes the results of a field investigation and hydrological assessment to determine the potential presence of surface waters of the United States (U.S.) (*i.e.*, Federal waters), streams or lakebeds subject to regulation by the California Department of Fish and Game (CDFG) pursuant to Section 1600 of the Fish and Game Code, and waters of the State subject to the Porter Cologne Water Quality Control Act (Porter Cologne) within the boundaries of an area currently designated as the SES Solar One AFC Assessment Area.

The Solar One AFC Assessment Area is located on a broad alluvial fan/plain bounded by the Cady Mountains on the north and Interstate 40 (I-40) on the south. The BNSF railroad runs parallel to I-40 on its north side. The overall site is covered by desert scrub and the region is extremely xeric. The site supports upland habitats composed primarily of Mojave creosote bush scrub without riparian or hydrophytic vegetation and no aquatic life is present on-site. Areas that are mostly off-site within the mountains are sparsely vegetated and best described as un-vegetated habitat (although some sparse vegetation is actually present).

An evaluation of hydrology on-site was performed using the Rosgen stream classification system and the California Rapid Assessment Method (CRAM), especially as it applies to flows that would be expected to occur within an ordinary high water mark (OHWM) up to the 100-year storm event. Rosgen (1996) provides a stream classification system that is widely accepted in the United States. The Rosgen stream classification system results in classifications based on channel morphology and hydrologic considerations. The path of shallow concentrated flow during more extreme rain events on the site does not exhibit erosion in most years, and this flow path is vegetated in most areas with upland vegetation. Therefore, the Rosgen stream classification system was applied to objectively evaluate the drainage features on-site. The Rosgen system defines hydrogeomorphological features that can be measured in the field to apply the classification. These features include consideration of bankfull depth, bankfull width,

bankfull discharge, flood-prone width, entrenchment ratio, sinuosity, and slope (Rosgen 1996). It was not possible to classify streams on-site using Rosgen (1996).

Features on-site were also evaluated using the California Rapid Assessment Method (CRAM) (Collins et al., 2006). CRAM includes procedures for evaluating existing drainage features, and we attempted to apply those procedures on-site. Once again, it was not possible to define streams, wetlands, or similar surface waters on-site using CRAM because of the lack of a definable bankfull stage or related parameters. These results further support the findings from applying the Rosgen classification system. Therefore, the project site is considered to not contain streams or washes.

No surface flows are expected through the 5-year storm event, and surface flows may occur in some areas between 5- and 10-year storm events. There are discontinuous landform terraces on-site along limited portions of drainage patterns and these discontinuous terraces appear to be associated with the limits of flows that would occur with the 5- to 10-year storm events, and they may also contain higher level flood events. No surface flows are expected to occur on the AFC Assessment Area along continuous channels in most years.

The Project Site consists of a broad alluvial fan/plain with relatively little topographic variation. The overall landform is relatively flat with shallow slopes trending from the north to south and in some areas to the southwest. There are occasional small hills (buttes) and sand dune areas on the Project Site. Several drainage patterns occur on the AFC Assessment Area. These drainage patterns follow the gradient of higher elevations in the mountains north and east of the project site towards lower elevations southerly and westerly across the Project Site. The lands between I-40 and the BNSF railroad slope to the west, ultimately towards Troy Dry Lake, a playa that is located west of the Project Site. There are no well-defined channels on-site, although some discontinuous flood terraces occur in a few areas on-site.

The drainage features on-site are not well defined channels resulting from active flow and consist of discontinuous floodplains with areas that exhibit a mixed pattern of sheet flow or shallow concentrated flow across isolated, wide areas of land and undefined drainage features over most of the site with evenly distributed desert scrub vegetation throughout. No well defined active floodplain or flow channels, whether from low or high flows are present. Flow of water on-site is ephemeral and occurs during periods of brief intense rainfall. Flow of water on-site does not occur in most years. It does not tend to occur until 5 to 10 year storm events, and does not consist of major flows at those times. Water flow on-site is not of sufficient intensity or duration to maintain channels indicative of a stream or wash.

### ***Waters of the U.S.***

There are no channels on-site that meet the definition of a stream, wash, or similar aquatic feature that can be classified using Rosgen (1996) or CRAM (Collins *et al.*, 2006) and would be potentially regulated by the Corps. The limited discontinuous flood terraces described on-site are sparsely distributed and do not exhibit flows of surface water in most years. Water flows on-site do not occur frequently enough or with sufficient duration to form or maintain channels with a bed and bank. These flood terraces do not indicate a clear natural scour line impressed on the bank, recent bank erosion, destruction of native terrestrial vegetation, and the presence of litter and debris that is associated with indicators of an OHWM. Upland scrub vegetation that persists over long periods of time is located within these terraces, and the terraces themselves are not continuous on the Project Site.

The paths of shallow concentrated flow that may occur with higher level storm events on-site are not associated with distinct or continuous flood terraces across most of the site. These paths of rare shallow concentrated flow events do not indicate a clear natural scour line impressed on the bank, recent bank erosion, destruction of native terrestrial vegetation, and the presence of litter and debris that is associated with indicators of an OHWM. Upland vegetation is prevalent throughout these areas. Therefore, no waters of the U.S. bounded by an OHWM were on-site and no waters of the U.S. occur on-site.

### ***Lakes and Streambeds***

No well defined streams or channels, as defined by Rosgen (1996) or using CRAM (Collins et al. 2006) and potentially regulated by the CDFG occur on-site. Also, no aquatic life is known to occur on-site. Surface water flow does not occur on-site in most years. There does not appear to be bodies of water on-site that flow at least periodically or intermittently through a bed or channel having banks and supporting fish or other aquatic life, including watercourse having a surface or subsurface flow that supports or has supported riparian vegetation. No lakes occur on-site. Therefore, lakes or streambeds subject to jurisdiction by the CDFG pursuant to Section 1600 of the California Fish and Game Code were not found on-site.

### ***Waters of the State***

No well-defined streams, as defined by Rosgen (1996) or using CRAM (Collins et al. 2006) that would be under the jurisdiction of the RWQCB occur on-site. Also, no aquatic life or riparian vegetation occurs on-site. Surface water flow does not occur on-site in most years. There do not appear to be surface waters on-site that are confined by beds, banks, and/or channels indicative of streams, creeks, or washes subject to Porter Cologne. Stormwater runoff and flows from flash floods on-site would represent surface water in the form of storm water runoff that could potentially be regulated pursuant to Porter Cologne. Concentrated flows through culverts under the railroad and highway may be potentially regulated.

**SECTION 4      IMPACTS****4.1      IMPACTS**

The Project will be designed to minimize ground disturbances and resulting environmental effects wherever practicable. The number of roadways will be kept to a minimum, paved roadways will be specifically located to provide main routes for quick access to the site for construction, maintenance, and operations. In addition, access from the main paved roads to the individual SunCatchers will be on unpaved solar field access routes between alternate rows of SunCatchers. Culverts will be installed in a limited number of locations, as necessary, for crossing of flood flow areas. Site layout for the Project will be based on avoiding major washes and minimizing surface-disturbing activities where practicable. Additionally, special status habitat areas (MFTL habitat) will be avoided to the extent practicable.

Brush trimming will occur along roads and around each group of SunCatchers. This task will consist of manually trimming the existing brush to 3 feet in height along the center of a 75-foot area between every other row of SunCatchers. After brush has been trimmed, blading for roadways and foundations will be utilized between alternating rows to provide access to individual SunCatchers. Blading will occur to remove localized rises or depressions to provide for proper alignment and operation of the individual SunCatchers.

The site layout will maintain pre-development drainage patterns. The paved roadways will have a low flow unpaved swale or roadway dip, as needed, to convey runoff to existing washes. Both paved and unpaved roads will utilize low flow culverts where necessary. Localized channel grading will occur on a limited basis to improve channel function, and to control flow direction away from site buildings and roadways. In addition, a channel will be constructed along the northeastern portion of the site to direct potential 100-year flooding away from the Main Services Complex building site. It is unknown at this time how many culverts will be necessary or where they will be located. This information will be provided once a detailed engineered layout is finalized.

Project construction will occur in two phases beginning in the northeastern corner of the site and moving south and west. Phase I development includes the northeastern section of the Project area down to the BNSF Railroad. Phase II includes the expansion of the Project to portions of land located both southwest and west of Phase I. Construction for both phases will occur in steps with the construction of Phase I at 500 MW (4,979 acres) and continuing on to Phase II, which will result in a net output of 350 MW (2,685 acres). It is expected that site construction will begin during the first quarter of 2010 and will end during the second quarter of 2014. A summary of construction effects on vegetation within the AFC Assessment Area can be found in Table 2. Approximately 7,812.5 acres of Mojave creosote bush scrub and 88.6 acres of disturbed Mojave creosote bush scrub will be affected by Project construction (Figure 2). Impacts on 237.3 acres of desert saltbush scrub are also anticipated. Developed lands currently occur on approximately 24.0 acres of the AFC Assessment Area and will be impacted as well as the un-vegetated habitat (67.6 acres) within the northern limit of the AFC Assessment Area.

Approximately 1,909.6 acres of Mojave creosote bush scrub, 139.9 acres of disturbed Mojave creosote bush scrub, and 289.1 acres of desert saltbush scrub occur within the 1000-foot buffer of the AFC Assessment Area and will be indirectly affected with the implementation of the Project. An additional

20.8 acres of Mojave creosote bush scrub, 14.4 acres of disturbed Mojave creosote bush scrub, and 34.4 acres of developed lands will be affected by the construction of the temporary access road.

Although the vegetation within the immediate vicinity of the SunCatchers will be regularly trimmed and much of the vegetation between rows of SunCatchers will be allowed to regenerate naturally, these narrow (approximately 74 feet wide) strips of vegetation are expected to have minimal residual biological value associated with them. Only select common species with small spatial requirements and tolerant of adjacent human activities (*e.g.*, house finch [*Carpodacus mexicanus*], certain lizards, snakes and rodents) are expected to continue to utilize these narrow strips of vegetation.

During the regeneration of native habitats, there is a potential for the establishment of invasive plant species within the Project Site and the 1000-foot buffer during Project construction and operation. Exotic, invasive species can displace or replace native plant and animal species, disrupt nutrient cycles, and cause changes in the patterns of plant succession. Sahara mustard (*Brassica tournefortii*) and red brome (*Bromus madritenus rubens*) are common invasive species that persist and spread across the Mojave Desert region. Shading from SunCatchers has been shown to increase soil moisture and lower soil temperatures, which may promote growth of invasive species (Smith 1987). The presence of exotic forbs and annual grasses (particularly *Schismus barbaratis*, *S. arabicus*, and *Bromus* spp.) increases the fuel density and continuity of fuels, facilitating fires that can burn hotter and cause more chronic damage to native vegetation.

#### **4.1.1 Special Status Plants**

##### ***Small-flowered Androstephium***

During the 2008 season, there were 52 observations of this species scattered throughout the AFC Assessment Area that would be directly impacted (Figure 4). Additionally, 14 observations of small-flowered androstephium would be indirectly affected within the 1,000-foot buffer of the AFC Assessment Area. Impacts on small-flowered androstephium are considered significant.

##### ***Emory's Crucifixion Thorn***

Loss of the one specimen of crucifixion thorn that was found within the northern central portion of the AFC Assessment Area in 2008 is considered to be adverse, but less than significant with the implementation of this Project (Figure 4).

##### ***White-margined Beardtongue***

Loss of the 22 occurrences of white-margined beardtongue detected within AFC Assessment Area during the 2008 season are considered significant as a result of the proposed Project (Figure 4).

##### ***Utah vine milkweed***

A single individual of Utah vine milkweed was observed in 2008 south of the railroad and north of I-40 (Figure 4). Impacts on this species are considered to be adverse, but less than significant with the implementation of this Project.

**4.1.2 Special Status Wildlife*****Desert Tortoise***

Impacts on desert tortoise and its habitat will be significant as a result of the proposed Project. Live desert tortoises or active burrows have been detected at 27 locations within the AFC Assessment Area, with a total of 18 live tortoises and 9 active burrow that will be directly impacted (Figure 4). This may represent between 18 and 33 tortoises based on estimations derived from the protocol survey data. Mortality from roadkill, site grading, enhanced predation by human-subsidized predators, and loss or degradation of suitable forage habitat are the most likely impacts on any desert tortoise that may remain on-site during construction and operation. Indirect impacts may occur to an additional 13 live tortoise and 1 active burrow locations detected within a 1000-foot buffer zone.

A total of 15 of the 53 sample plots surveyed within the AFC Assessment Area during protocol surveys had tortoise or tortoise sign recorded. The distribution of tortoise and tortoise sign was not random and tended to be concentrated in the north-central portion of the larger SES Assessment Area (Figure 5). Approximately 56 percent (7,441 acres) of the entire surveyed area (13,200 acres) that was confirmed as being occupied by tortoise is within the AFC Project boundary and will be directly impacted (Figure 5). Additionally, 11 percent (1,440 acres) of the surveyed area is within the 1000-foot buffer that may be indirectly impacted with the implementation of the Project. The majority of the AFC Assessment Area is considered suitable habitat for desert tortoise.

Based on sample plot survey coverage (33%) and typical tortoise detectability during protocol surveys (55-68%; Nussear et al., 2008), the larger SES Assessment Area surveyed likely supports between 70 and 127 tortoise (Figure 5). Additional tortoise may occur in the remainder of the AFC Project Site, although presumably at lower densities than the survey cells where tortoise and tortoise sign were actually detected.

Indirect effects of the project include subsidizing potential predators of tortoise, such as ravens and coyotes, through the provision of limiting resources (*e.g.*, fresh water, food, nest sites) mostly absent from the site (Boarman *et al.*, 2006).

***Burrowing Owl***

Two individual owls were observed on-site in 2008, however none were observed in 2007. Habitat that supports these two burrowing owl detection locations will be affected as a result of the proposed project. The residency status of these owls still needs to be determined since no active burrows were detected during the field surveys. Impacts on resident burrowing owls would be considered significant.

***Mojave Fringe-toed Lizard***

Approximately 16.9 acres of potential Mojave fringe-toed lizard habitat exists between the railroad and Interstate 40, where one individual MFTL was detected. Direct disturbance of this area will be avoided during construction and operation of the proposed Project. However, disturbance of the surrounding vegetation and fencing of the larger project site would isolate this one patch of MFTL habitat from other habitat patches located west and east of the Project area. Indirect effects of the project include



subsidizing potential predators of MFTL, such as ravens through the provision of limited resources (*e.g.*, fresh water, nest sites) mostly absent from the site.

### ***American Badger***

One American badger was found in the northeastern corner of the Project area. Impacts on badger are anticipated to be significant due to permanent loss of 8,230 acres of potential habitat, which is sufficient to support at least one badger territory.

### ***Nelson's Bighorn Sheep***

No Nelson's bighorn sheep were detected in the AFC Assessment Area, though the area overlaps with occupied year-round use habitat for this species in the northeast corner (Figure 6). Approximately 458.3 acres of habitat suitable for bighorn sheep will be affected in the AFC Assessment Area and 404.5 acres will be affected in the 1000-foot buffer of the AFC Assessment Area as a result of the proposed Project.

#### **4.1.3 Other Sensitive Species**

Disturbance to the California horned lark, Bendire's thrasher, golden eagle, and Swainson's hawk are possible as a result of the proposed Project. These species were detected in the project area or vicinity. Proposed site clearing activities will be conducted during the non-breeding season (September – February). Impacts on these species are regulated by the Migratory Bird Treaty Act (MBTA). Potential impacts on these special status bird species would be adverse, but less than significant due to the extensive amount of suitable habitat for these species in the region and project vicinity.

#### **4.1.4 Effects on Wildlife Movement**

The AFC Assessment Area is surrounded by the Cady Mountains to the north and east, the railroad and I-40 to the south. Currently east-west wildlife movement is unconstrained between the railroad and the Cady Mountains. This movement area will be constrained with the addition of the Solar One Project. Constraint of this area will primarily affect terrestrial species such as desert tortoise and MFTL. Mammal species are less constrained because they can use the foothills and existing roads or trails as travel corridors. Bird species will simply fly over the AFC Assessment Area. The culverts associated with the railroad and highway are expected to remain undisturbed during Project construction and operation, allowing for continued north-south wildlife movement through the site.

Areas of habitat fragmentation will occur in the southern portion of the AFC Assessment Area, including private lands not included in the project area that would be surrounded by the project, railroad and I-40. The private lands in the northern portion of the AFC Assessment Area that are not a part of the project area would be constrained by fencing associated with the project.

#### **4.1.5 Operations and Maintenance Effects**

Potential effects on biological resources as a result of Project operations and maintenance include noise, collision hazards, potential wildlife mortality associated with evaporation ponds, and attraction of human subsidized predators. These potential effects are discussed further below.

**4.1.6 Noise**

The existing noise conditions at the Project site varies with the distance from Interstate 40 and the adjacent railroad. Noise varies from the mid 40s to nearly 80 dBA  $L_{eq}$ . Construction activities will generate noise that will vary from 48 to 76 dBA  $L_{eq}$ . The wildlife species observed in the Project vicinity are species that are considered tolerant of noise and would not be substantially affected by temporary construction noise; Species remaining on-site during project operation are expected to adapt to the new noise levels that are less than the typical noise impact threshold of 60 dBA  $L_{eq}$  hourly. The potential effects on wildlife from noise are considered less than significant due to the temporary nature (construction) and low levels during operation.

**4.1.7 Collision Hazards**

The receivers that are associated with the reflector bays may be used as perching sites for songbirds and raptors, but are not expected to present a substantial collision hazard. The 500 foot extension of the transmission line outside of the Project Site will not pose a significant collision hazard due to low use by special status species deemed most at risk for collision with transmission lines.

**4.1.8 Wildlife Mortality from Evaporation Ponds**

Evaporation ponds may become an attractive nuisance with a potential mortality risk to bird species. While not common, migratory ducks in North Dakota, Texas, and California have been reported to suffer from salt toxicosis after ingesting water from highly saline lakes or other water sources (Windingstad *et al.*, 1986, Gordus *et al.*, 2002, Stolley and Meteyer 2004). Evaporation ponds in desert habitats can become highly saline as the water evaporates and could cause salt toxicity if certain bird species (waterfowl) are allowed to access the ponds and drink the water. However, waterfowl are uncommon or absent in the project vicinity. It is not likely that most resident birds and other small wildlife species would ingest large amounts of highly saline water from the evaporation ponds since they obtain their water from their food; therefore, wildlife impacts from evaporation ponds are not expected to be significant. Should the water contain significant concentrations of trace elements, such as selenium or arsenic, the potential for wildlife mortality would increase. An initial monitoring program of the pond water is recommended (Bradford *et al.*, 1991).

**4.1.9 Attraction of Human Subsidized Predators**

Substantial development within the desert often attracts ravens and coyotes at higher densities than in areas of undeveloped desert landscapes (Boarman *et al.*, 2006). Operation of the facility could allow for predator densities to increase due to the increased presence of limited resources (*e.g.*, freshwater, nest sites) that is currently absent from the site. This effect could extend to the adjacent lands within the assessment buffer. This indirect impact is considered significant.

**4.1.10 Cumulative Effects**

The Solar One Project and associated temporary access road, Pisgah Substation expansion, and transmission line upgrade are not expected to result in significant cumulative effects on biological resource areas.

Cumulative effects on biological resources as a result of past, present, and reasonably foreseeable future actions, in combination with the Project, would mainly result from loss of habitat, constraints to wildlife movement corridors, habitat degradation and other “edge” effects. BLM, in consultation with the USFWS and CDFG, has identified areas of biological concern and has designated DWMA, ACECs, and Designated Critical Habitat to avoid significant cumulative impacts on biological resources in the region. The Project Site is located outside of these high value biological resource areas; therefore, the proposed project would not contribute significantly to a cumulatively significant impact at a regional scale.

However, there are numerous pending BLM solar and wind applications (Figure 7) located near the project area that total approximately 138,600 acres for solar projects and 51,900 acres for wind projects. These solar and wind applications may impact habitat for desert tortoise, Mojave fringed-toed lizard, Nelson’s bighorn sheep, small-flowered androstephium, Emory’s cruxifixion-thorn, and white-margined beardtongue. Several applications are located within the ACEC to the southeast of the Project and within occupied bighorn sheep and desert tortoise habitat. Should all of the applications be approved, cumulative effects on biological resources from the pending applications would include significant impacts on wildlife movement east of the Project, potential degradation of bighorn sheep habitat, loss of desert tortoise Designated Critical Habitat, and loss of habitat that supports special status plant species as well as raptor foraging areas. These impacts would cause significant cumulative effects at a regional scale if they are inconsistent with the federally approved West Mojave Plan.

The temporary access road is located within the I-40 ROW to the southeast of the Project Site; however, this is a temporary impact of approximately 70 acres including a 100-foot buffer for the 30-foot road. No special status species will be affected by the access road; therefore, the temporary impacts of the access road would not contribute to cumulative effects of the Project or the regional applications.

The proposed 65-mile transmission line upgrade will follow the existing transmission line corridor that connects the Pisgah Substation to the Lugo Substation. Since it will follow an existing transmission corridor impacts on biological resources are anticipated to be minimal and not cumulatively significant. The transmission line upgrade would not contribute to a cumulatively significant impact at a regional scale.

**SECTION 5 MITIGATION AND MONITORING****5.1 CONSTRUCTION MONITORING AND VEGETATION CLEARING**

Provide mitigation construction monitoring by a qualified biologist. The biologist will be given authority to supervise the functions listed below.

- Erosion and sedimentation control will be implemented during Project construction to retain sediment on-site and to prevent violations of water quality standards.
- Diversion ditches and/or berms will be constructed as necessary to divert runoff from off-site areas around the construction site.
- Awareness training for desert tortoise, Mojave fringed-toed lizard, and other special status resources will be provided to all construction crews and operations staff.
- A biologist will monitor the construction activities daily during the initial site disturbance and at weekly intervals after all tortoises have been removed from the site. Exclusionary fencing will be checked frequently to ensure that they are effective barriers for tortoise.
- Develop a weed management plan that is consistent with the Mojave Weed Management Area Memorandum of Understanding (MOU), which includes prevention, control, and eradication of weeds and invasive plant species, and educating the public about weed control in the region (DMG 2002a). The MOU identifies a priority list of invasive species to control in the Mojave.

**5.2 FOCUSED MITIGATION*****Desert Tortoise***

- Conduct a pre-construction clearance surveys to remove any tortoise from the construction area, erect a temporary exclusionary fence around the construction area in occupied desert tortoise habitat, and assign roving biological monitors that will monitor the various construction crews in the active construction areas. Biological monitoring would also occur during access road improvements in occupied desert tortoise habitat.
- A tortoise relocation program shall be developed and approved by BLM and the wildlife agencies to minimize the direct mortality of tortoise during construction and operation.
- After all tortoise are removed from the site, the perimeter fence would be designed to preclude tortoise from re-entering the site.
- Mitigation for permanent impacts on desert tortoise habitat would occur through an acreage-based compensatory mitigation formula as required by the BLM and USFWS approved West Mojave Plan and in consultation with CEC and CDFG. The formula includes payment into a habitat conservation fund. The amount of mitigation required is subject to final design and concurrence with the resource agencies.
- A biological monitor must be present during maintenance activities if occurring in occupied desert tortoise habitat located outside of the perimeter fence. Pre-maintenance clearance surveys followed by exclusionary fencing may also be required in occupied desert tortoise habitat, if the maintenance action requires significant ground or vegetation disturbance.

- Speed limits within the Project Site will be restricted to less than 25 MPH during construction and in areas surrounding the Project Site during operation of the Project.
- Monitor for the presence of ravens and other potential human subsidized predators of special status wildlife and implement a control plan if predator densities substantially increase in the vicinity of the facility. Institute BMPs to minimize the subsidization of predators (trash control, availability of freshwater, nest sites, etc.).
- Placement of kiosks or similar facilities with educational information on desert tortoise, ravens, trash, and impacts on desert tortoise, and the Solar One Project shall be installed at rest stops on I-40 near the AFC Assessment Area.

***Burrowing Owl***

- Pre-construction surveys for occupied owl burrows will be conducted during the non-breeding season prior to initial site disturbance. If an occupied owl burrow is detected, the owl will be passively displaced from the burrow, which would be subsequently collapsed to prevent reoccupation.
- A replace burrow(s) would be installed within the ACEC east of the project if an occupied burrow is removed from the Project site.
- Compensatory mitigation for tortoise habitat will also mitigate for burrowing owl habitat loss.

***Mojave Fringe-toed Lizard***

- A temporary enclosure fence around the one MFTL habitat patch within the Project site will be erected to protect MFTL from adjacent construction activities.
- Compensatory mitigation for tortoise habitat will also benefit MFTL.

***American Badger***

- Prior to construction, measures will be taken to minimize impacts on any badgers that are encountered. If a badger and its active burrow are found on-site, a qualified biologist shall monitor the burrow during construction. It is likely that the badger will leave the site once construction begins. Once the burrow is confirmed to be unoccupied, it shall be collapsed.
- Compensatory mitigation for tortoise habitat will also benefit American badger.

***Nelson's Bighorn Sheep***

- If active bighorn sheep are found on-site, a biologist should be present to monitor and minimize impacts on this species where practicable.
- Sheep watering holes in the Cady Mountains are maintained by a local conservation organization. Sheep management personnel access the Cady Mountains via Hector Road. The facility operator will maintain access to the Cady Mountains via Hector Road or other suitable alternative route.

***Raptor Nest Sites and Migratory Birds***

The following mitigation measures are recommended to reduce or eliminate effects on raptors and migratory birds during Project construction and operation in compliance with the Migratory Bird Treaty Act. The Project will implement the suggested courses of action listed below to minimize affects to nesting raptors and migratory birds.

- Where practicable, ground-disturbing activities will be conducted outside the bird nesting season (February through July).
- Clearance surveys for nesting birds will be conducted before each phase of Project construction if the activity must be conducted during the bird breeding season.
- Trace element concentrations of the evaporation pond water should be monitored quarterly to determine if there is a concern regarding wildlife access to the pond water. If toxicity effects on wildlife become apparent, the evaporation ponds will be covered to minimize wildlife access. The covers should be designed to minimize attraction of predator and scavenger species.

***Wildlife Movement***

- The perimeter fence should be located such that it does not block wildlife access to drainage culvert structures under the railroad and highway.
- East-west wildlife movement shall be maintained along the northern boundary of the project site.

***Special Status Plants***

- Seeds and cuttings of special status plants should be collected during the appropriate season prior to site disturbance for propagation and relocation in order to conserve the genetic resource of the rare plants.
- Compensatory mitigation for tortoise habitat will also benefit rare plants.

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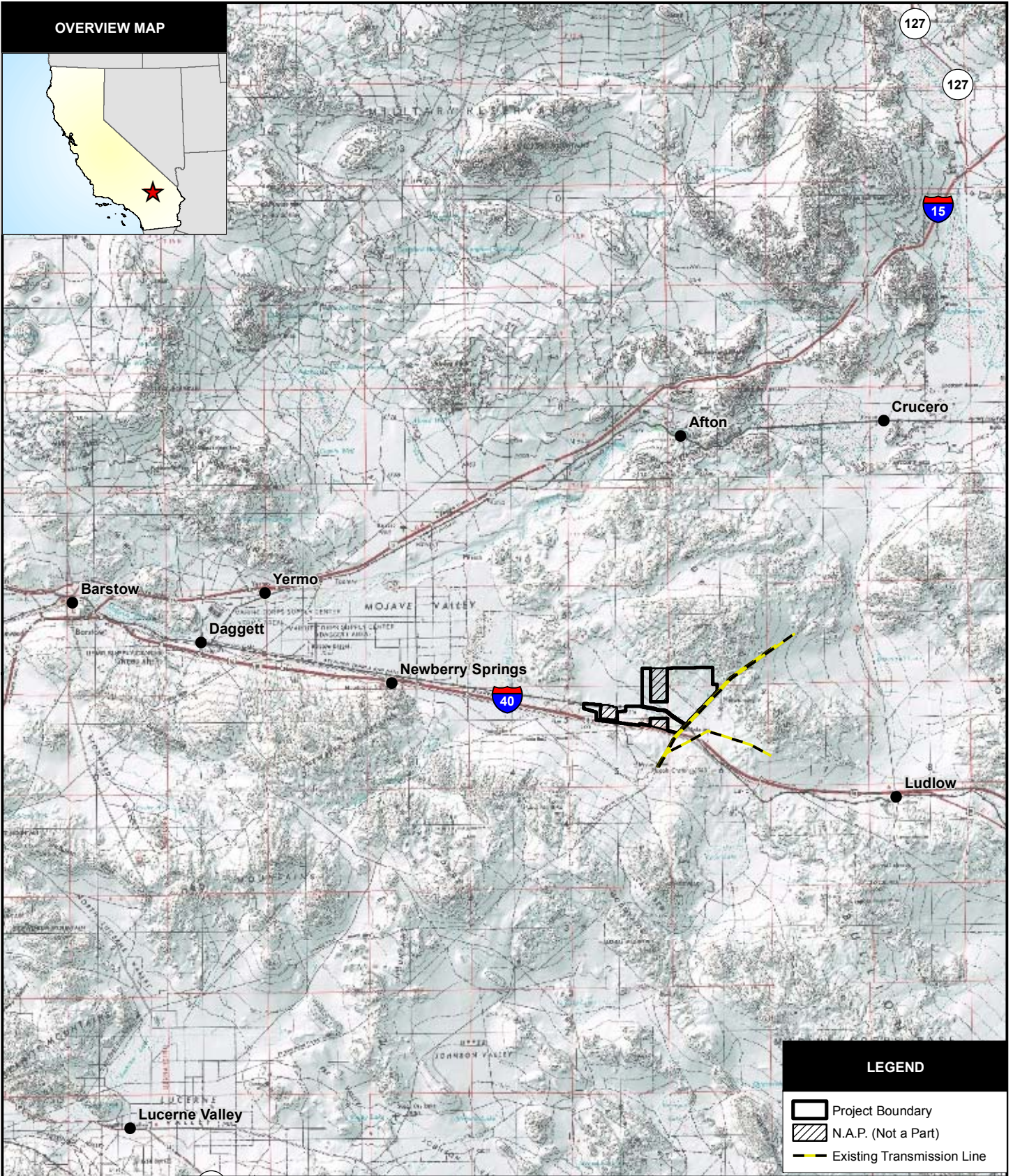








# OVERVIEW MAP



## LEGEND

- Project Boundary
- N.A.P. (Not a Part)
- Existing Transmission Line



SOURCES:  
 Stantec Engineering (project site Oct. 2008);  
 ESRI (overview);  
 USGS (7.5' quads various dates).

## GENERAL VICINITY MAP SOLAR ONE PROJECT

**URS**

4 0 4 8 Miles

SCALE: 1" = 8 Miles(1:506,880)  
 SCALE CORRECT WHEN PRINTED AT 8.5X11

CREATED BY: LG

DATE: 11-10-08

FIG. NO:

PM: WM

PROJ. NO: 27658176.10000

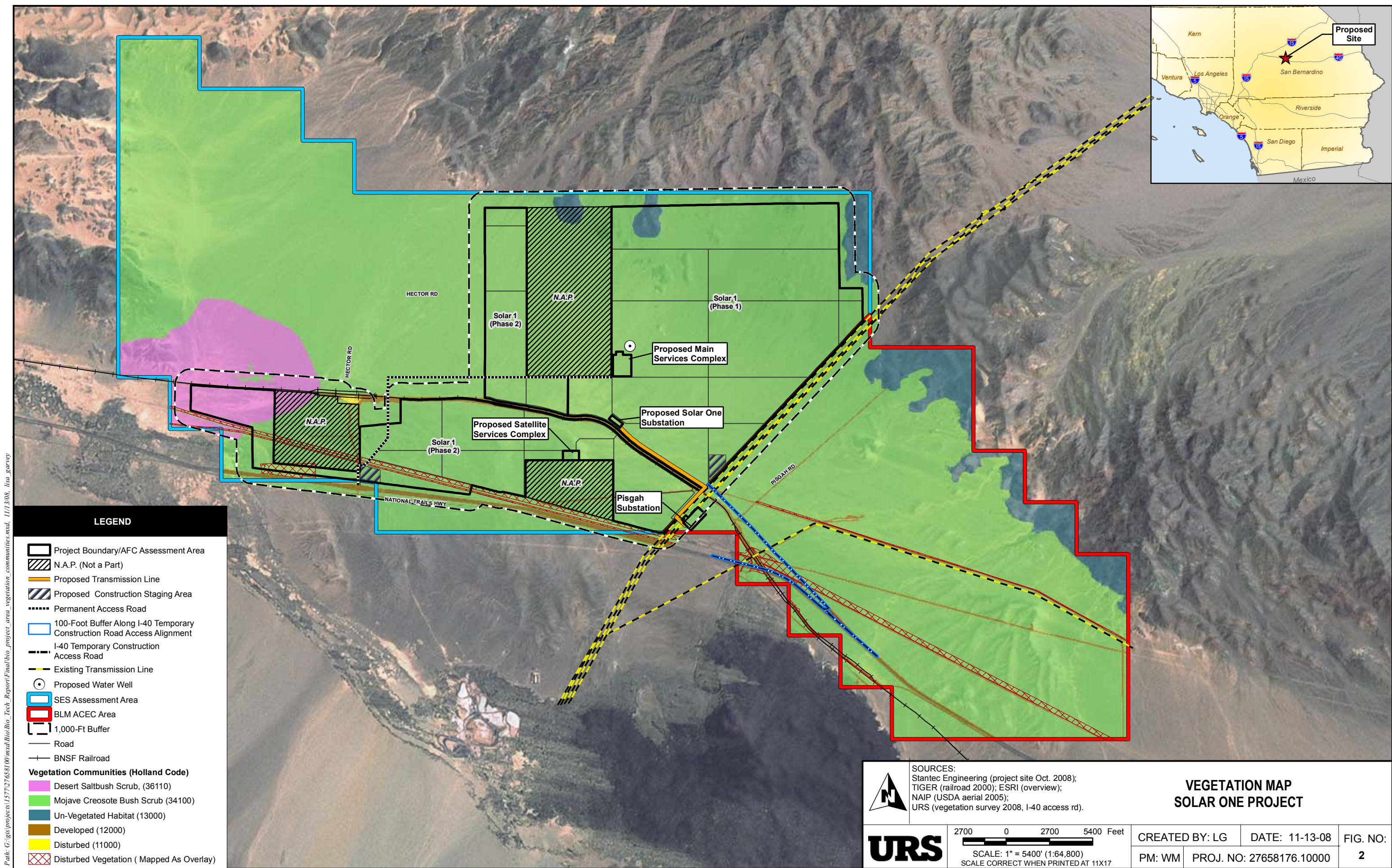
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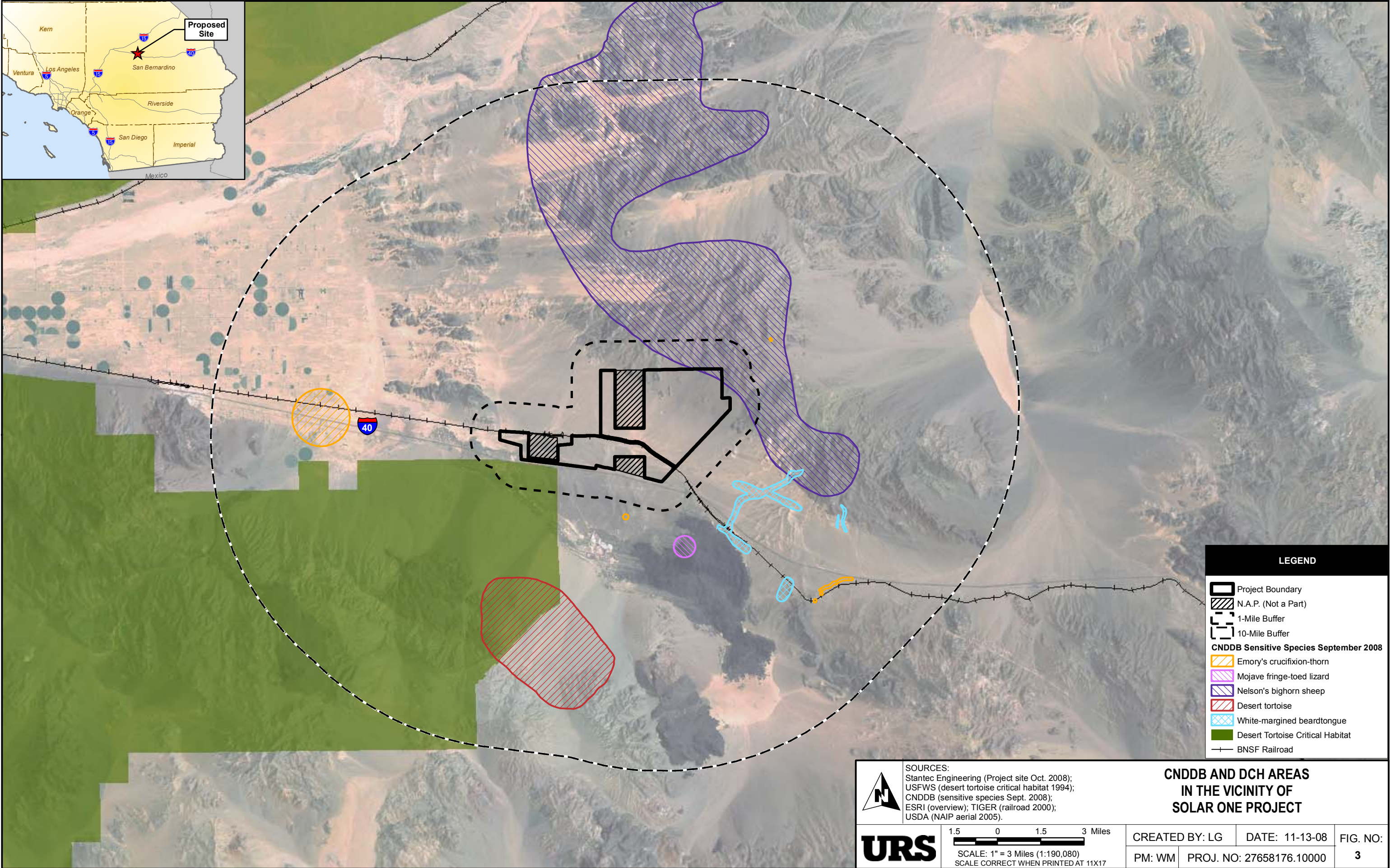








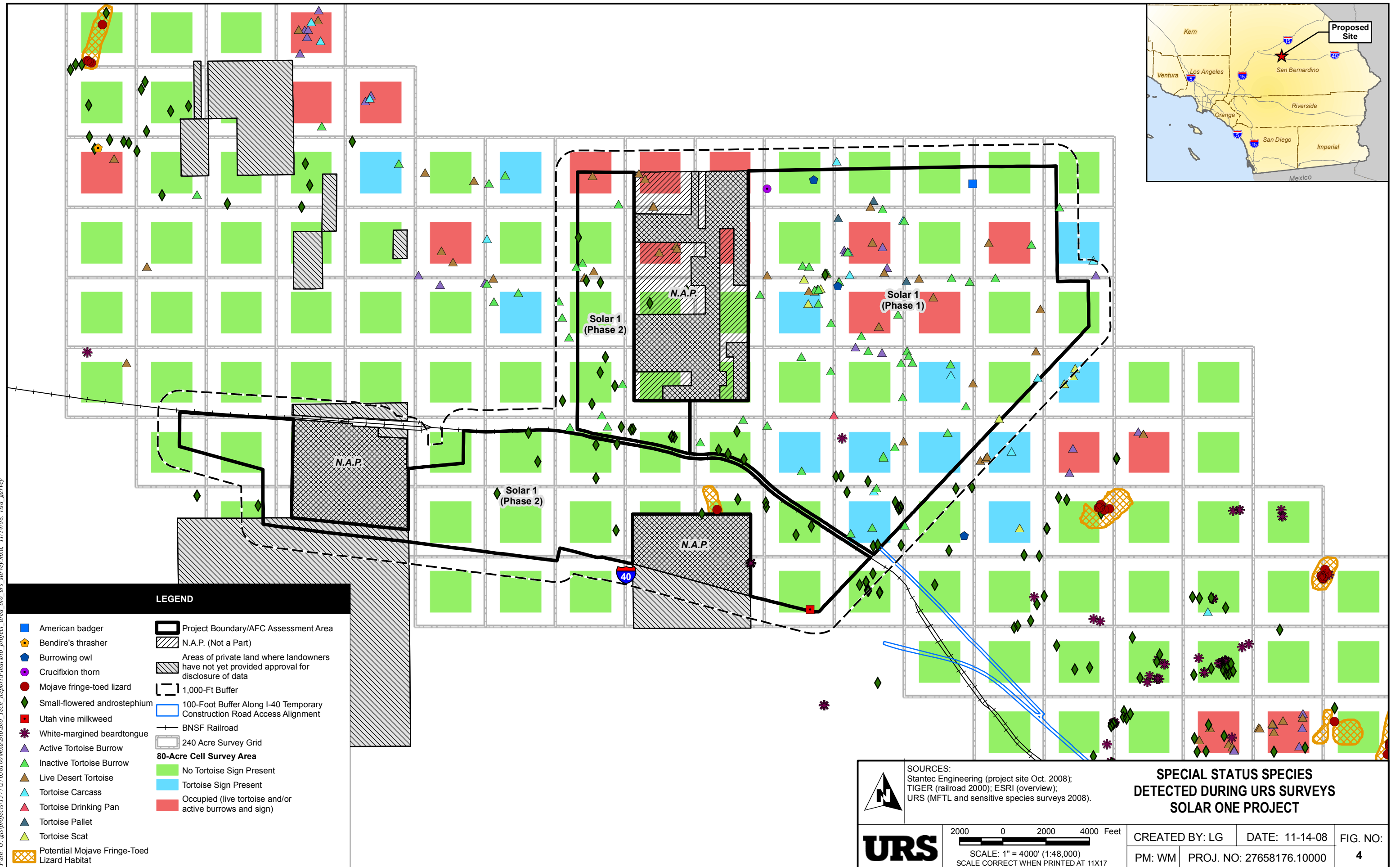
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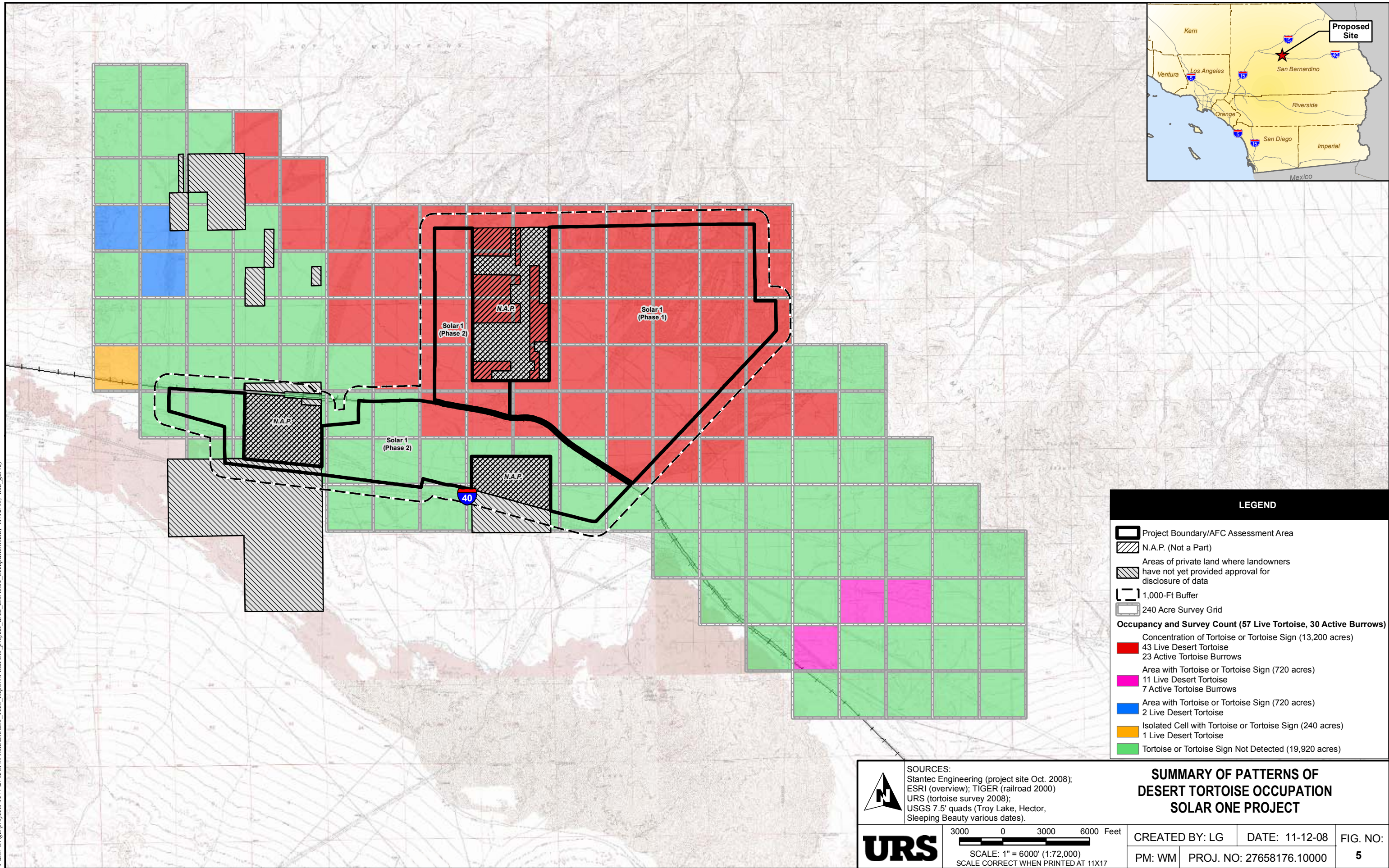
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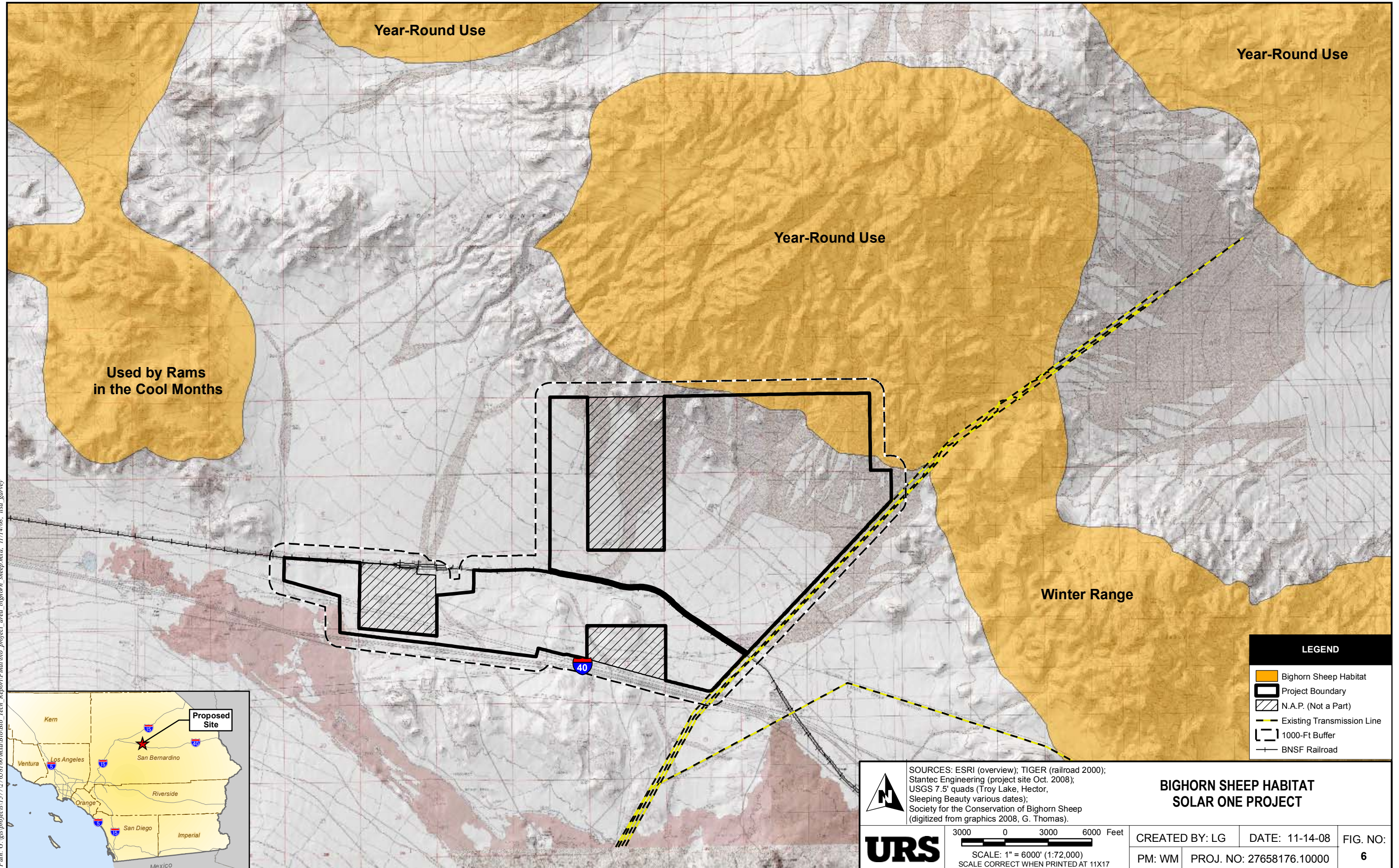








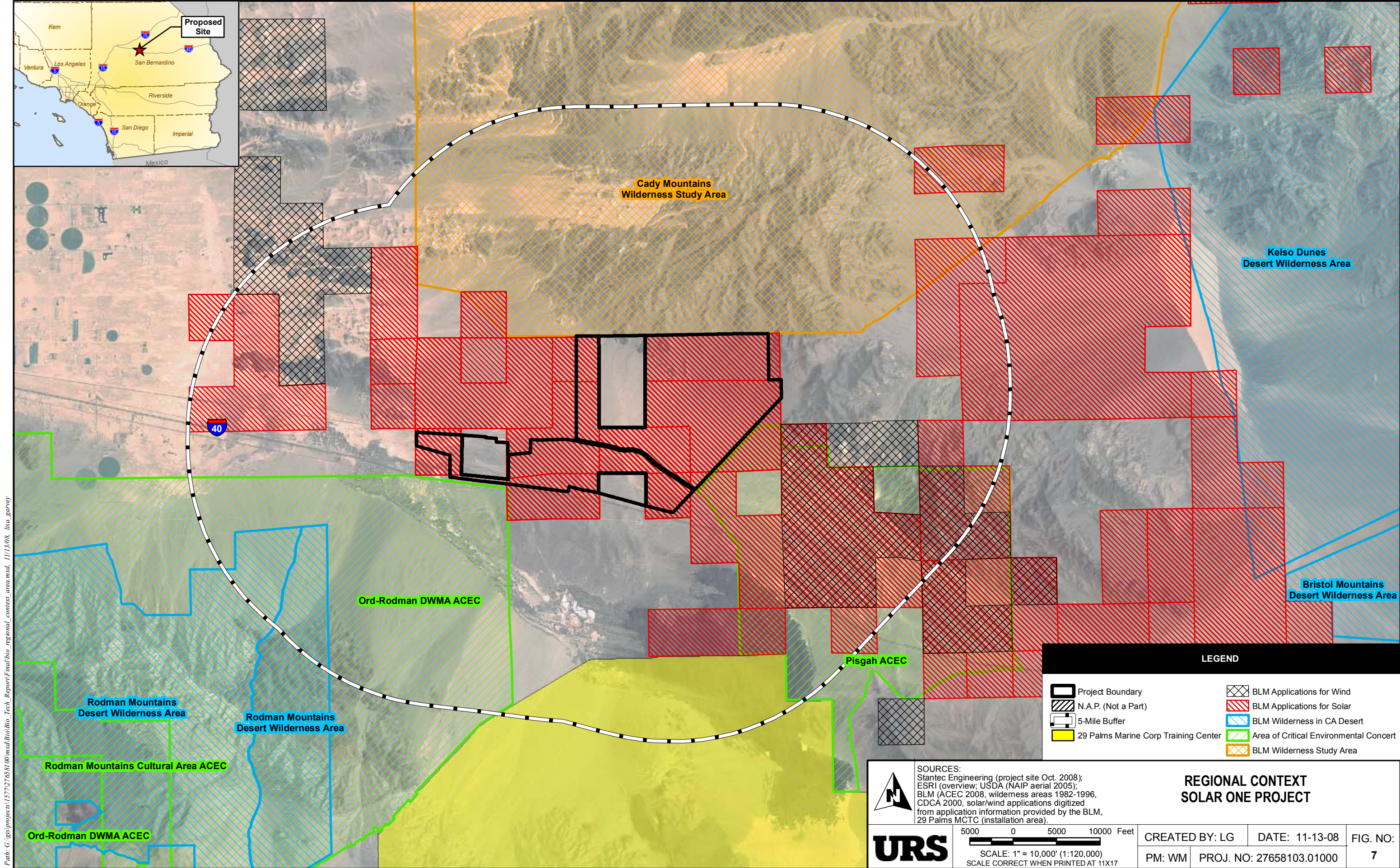
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# APPENDIX A

## Survey Dates and Field Personnel

Survey Date	Survey Type	Survey Staff	Total Field Hours
<b>2007 FIELD EFFORT</b>			
3/19/2007	Rare Plant Survey Site Reconnaissance	BM, CH, DS, GK, WV	40
3/20/2007	Rare Plant Survey Site Reconnaissance	BM, CH, DS, GK, WV	40
3/21/2007	Rare Plant Survey Site Reconnaissance	BM, CH, DS, GK, WV	40
3/22/2007	Rare Plant Survey Site Reconnaissance	BM, CH, DS, GK, WV	40
4/4/2007	Rare Plants	CSI, Cso, GH, MH	32
4/6/2007	Rare Plants	GH, MH	16
4/9/2007	Rare Plants	AB, Bca, CSI, GH, GK, JL, KS, MH, SJ, WV	80
4/10/2007	Rare Plants	AB, Bca, CSI, Cso, GH, GK, JL, KS, MH, SJ, WV	88
4/11/2007	Rare Plants	AB, Bca, CSI, Cso, GH, JL, KS, MH, WV	72
4/12/2007	Rare Plants	JL, KS, MH	24
4/13/2007	Rare Plants	Bca, CSI, EH, GH, JL, KS, MH, Mwa, WV	72
5/3/2007	Rare Plants	Bca, SJ	16
5/4/2007	Rare Plants	Bca, SJ	16
5/5/2007	Rare Plants	Bca, SJ, GH, MH, Mwa	40
5/6/2007	Rare Plants	Bca, SJ	16
5/7/2007	Rare Plants	EH, Mwa	16
5/8/2007	Rare Plants	Cso, EH, GK, Mwa	32
5/9/2007	Rare Plants	Cso, EH, GK, Mwa	32
5/10/2007	Rare Plants	CSI, Mwa	16
5/11/2007	Rare Plants	CSI, Mwa	16
5/15/2007	Desert Tortoise	DP, EH, GH, MH, Mwa, RB	48
5/16/2007	Desert Tortoise	GH, RB	16
5/16/2007	Desert Tortoise	Cso, DP, EH, GH, KMc, MH, Mwa, RB	64
5/17/2007	Desert Tortoise	Cso, DP, EH, GH, KMc, MH, Mwa, RB	64
5/18/2007	Desert Tortoise	EH, DP, GH, KMc, MH, Mwa, RB	56
5/19/2007	Desert Tortoise	CC, CR, Cso, DP, EH, TM	48
5/20/2007	Desert Tortoise	CR, MH, Mwa, TM	32
5/21/2007	Desert Tortoise	CR, EH, GH, SS, TM	40

# APPENDIX A

## Survey Dates and Field Personnel

Survey Date	Survey Type	Survey Staff	Total Field Hours
5/22/2007	Desert Tortoise	CR, DP, EH, GH, KMc, LR, Mwa, SS, TM	72
5/23/2007	Desert Tortoise	DP, EH, GH, KMc, LR, Mwa, SS	56
5/24/2007	Desert Tortoise	DK, DP, GH, KMc, LR, MH, Mwa, RB, SS	72
5/25/2007	Desert Tortoise	GH, LR, Mwa, RB	32
5/30/2007	Desert Tortoise	EH, GH, GK, MH	32
5/31/2007	Desert Tortoise	EH, GH, GK, MH	32
		<b>2007 Total Field Hours</b>	<b>1,408</b>
<b>2008 FIELD EFFORT</b>			
3/10/2008	Rare Plants and Vegetation Mapping	EM, GK, HB, Kma, Mbal, MH, TO	56
3/11/2008	Rare Plants and Vegetation Mapping	EM, GK, HB, Kma, Mbal, MH, TO	56
3/12/2008	Rare Plants and Vegetation Mapping	EM, GK, HB, Kma, Mbal, MH, TO	56
3/13/2008	Rare Plants and Vegetation Mapping	DE, EM, GK, HB, Kma, MF, MH	56
3/14/2008	Rare Plants and Vegetation Mapping	DE, GK, Kma, MF, MH	40
3/15/2008	Rare Plants and Vegetation Mapping	DE, EK, Kma, MH	32
3/16/2008	Rare Plants and Vegetation Mapping	AS, CT, DE, DH, EK, TW	48
3/16/2008	Rare plants	Kma, MH	16
3/17/2008	Rare plants	DH, GK, Kma, Mbak, MH, TW	48
3/17/2008	Rare Plants and Vegetation Mapping	DE, EK	16
3/18/2008	Rare plants	DE, DH, EK, GK, Kma, Mbak, MH, TW	64
3/19/2008	Rare plants	GK, DE, EK, Kma, TW, MH	48
3/20/2008	Rare plants	GK, DE, EK, Kma, Mbak, DS, MH	56
3/21/2008	Rare plants	DE, EK	16
3/24/2008	Rare Plants and Vegetation Mapping	DE, EK, GK, Kma, LN, Mbak, RK	56
3/25/2008	Rare Plants and Vegetation Mapping	DE, EK, GK, Kma, LN, Mbak, RK	56

Survey Date	Survey Type	Survey Staff	Total Field Hours
3/26/2008	Rare Plants and Vegetation Mapping	DE, EK, GK, Kma, LN, Mbak, RK	56
3/27/2008	Rare Plants and Vegetation Mapping	DE, EK, GK, LN, Mbak, RK	48
3/28/2008	Rare Plants and Vegetation Mapping	EK, GK, Kma, LN	32
3/29/2008	Rare Plants and Vegetation Mapping	EK, Kma, TO, YB	32
3/30/2008	Rare Plants and Vegetation Mapping	EK, Kma, RK, TO, YB	40
3/31/2008	Rare Plants and Vegetation Mapping	EK, GK, Kma, Mbal, RK, TO	48
4/1/2008	Desert Tortoise	EK, GK, JJ, Kma, RK	40
4/1/2008	Rare Plants and Vegetation Mapping	Mbal, TO	16
4/2/2008	Desert Tortoise	EK, GK, JJ, Kma, RK	40
4/2/2008	Rare Plants and Vegetation Mapping	Mbal, TO	16
4/3/2008	Desert Tortoise	EK, GK, JJ, Kma, RK	40
4/3/2008	Rare Plants and Vegetation Mapping	Mbal, TO	16
4/4/2008	Rare Plants and Vegetation Mapping	EK, GK, JJ, Kma, RK	40
4/4/2008	Rare Plants and Vegetation Mapping	Mbal, TO	16
4/5/2008	Desert Tortoise	BCr, EK, GK, JC, JJ, KB, Kma, MV, PW, RK, TO	88
4/6/2008	Desert Tortoise	BCr, EK, GK, JC, JJ, KB, Kma, MV, PW, RK, TO	88
4/15/2008	Desert Tortoise	CSt, DT, GK, JH, PW, RA	48
4/16/2008	Desert Tortoise	DT, GK, JS, PW, RA	40
4/17/2008	Desert Tortoise	BB, DT, GK, PW, RA	40
4/18/2008	Desert Tortoise	DT, GK, PW, RA	32
5/5/2008	Desert Tortoise	DT, GK	16
5/5/2008	Rare plants	CT, JS, Mbal, MH, RK, TO	48
5/6/2008	Desert Tortoise	DT, GK, JJ	24
5/6/2008	Rare plants	CT, JS, Mbal, MH, RK, TO	48

Survey Date	Survey Type	Survey Staff	Total Field Hours
5/7/2008	Desert Tortoise	DT, GK, JJ	24
5/7/2008	Rare plants	CT, JS, Mbal	24
5/8/2008	Rare plants	CT, GK, JJ, JS, Mbal	40
5/9/2008	Rare plants	CT, GK, JJ, JS, Mbal, MH, YB	56
5/10/2008	Rare plants	CT, GK, JJ, JS, MH, YB	48
6/2/2008	Mojave Fringe-toed Lizard	GK, JJ, JS	24
6/3/2008	Mojave Fringe-toed Lizard	DB, GK, JJ, JS	32
6/4/2008	Mojave Fringe-toed Lizard	DB, GK, JJ, JS	32
6/5/2008	Mojave Fringe-toed Lizard	GK, JJ, JS	24
6/6/2008	Mojave Fringe-toed Lizard	GK, JJ, JS	24
7/22/2008	Delineation of Waters	BMW, MM	NA
7/23/2008	Delineation of Waters	BMW, MM	NA
		<b>2008 Total Hours</b>	<b>2,000</b>
		<b>Total Field Survey Hours</b>	<b>3,408</b>

Notes:

URS Staff: AB – Alyssa Berry, BB – Brittany Benson, BCa – Bridget Canty, BCr – Bill Craig, BM – Brooke McDonald, BMW – Bill Magdych, CC – Corey Chan, CR – Cheryl Rustin, CSI – Crissy Slaughter, CSo Claudia Solorzano, CSt – Christine Stora, DB – Darren Burton, DE – Dave Erikson, DH – Devetta Hill, DK – Danni Klein, DP – Dallas Pugh, DT – Denise Tu, EH – Ellen Howard, EK – Eric Klein, GH – Greg Hoisington, GK – Glen Kinoshita, JC – Jean Charpentier, JH – Jim Hornback, JJ – Jeff Johnson, JL – Julie Love, JS – Jill Seed, KB – Karen Brown, KMc – Ken McDonald, KMa – Kristin Marsh, KS – Kelly Sleeth, LR – Laura Rizzo, MM – Matt Moore, MV – Mark Vania, MWa – Matt Wartian, RA – Rachel Avila, RB – Rick Bailey,

RK – Rich Kleinleder, SJ – Sage Jensen, SS – Shanti Santulli, TM – Theresa Miller, TO – Todd Ontl, TW – Tim Witman, WV – Wayne Vogler

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RK – Rich Kleinleder, SJ – Sage Jensen, SS – Shanti Santulli, TM – Theresa Miller, TO – Todd Ontl, TW – Tim Witman, WV – Wayne Vogler

Subcontractors: AS – Aaron Schusteff, CH – Cindy Hopkins, CT – Chris Thayer, DS – Dave Silverman, EM – Erin McDermott, HB – Heath Bartosh, LN – Lech Naumovich, MBak – Marc Baker, MBal – Michelle Balk, MF – Michael Faden, MH – Michael Honer, PW – Peggy Wood,

YB – Yancy Bissonnette<sup>1</sup>

Summary of Total Field days and Hours by Survey Type		
Survey Type	Total Field Days	Total Field Hours
Desert Tortoise	153	1,224
Mojave Fringe-toed Lizard	17	136
Rare Plant Survey Site Reconnaissance	20	160
Rare Plants	137	1,096
Rare Plants and Vegetation Mapping	99	792
Total Field Survey Hours		3,408

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# APPENDIX B

## Potential Species Occurring Within Solar I Project Vicinity

SPECIES		SENSITIVITY STATUS			HABITAT ASSOCIATIONS	POTENTIAL TO OCCUR	STATUS ON-SITE
Common Name	Scientific Name	Federal	State	CNPS			
Plants							
Small-flowered androstephium	<i>Androstephium breviflorum</i>	None	None	2	Mojave desert scrub (bajadas), blooms March-April.	Present. Habitat throughout the survey area.	Observed in 2008, but not in 2007.
White bearpoppy	<i>Arctomecon merriamii</i>	None	None	2	Chenopod scrub, Mojave desert scrub, blooms April-May.	Moderate potential.	Not observed in 2007 or 2008 survey area.
Plummer's mariposa lily	<i>Calochortus plummerae</i>	None	None	1B	Chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, valley and foothill grassland, blooms May-July.	None.	Not observed in 2007 or 2008 survey area.
Alkalai mariposa lily	<i>Calochortus striatus</i>	None	None	1B	Chaparral, chenopod scrub, Mojave desert scrub, meadows and seeps at north base of San Bernardino Mts., blooms April-June.	None.	Not observed in 2007 or 2008 survey area.
Booth's evening primrose	<i>Camissoniaw boothii</i> var. <i>boothii</i>	None	None	2	Joshua tree woodland, pinion and juniper woodland, blooms April-September.	None.	Not observed in 2007 or 2008 survey area.
Emory's crucifixion thorn	<i>Castela emoryi</i>	SC	None	2	Dry, rocky desert washes, slopes and plains, blooms June-July.	Present.	Observed during 2008 survey, but not 2007.
White-bracted spineflower	<i>Chorizanthe xanti</i> var. <i>leucotheca</i>	None	None	1B	Mojave desert scrub, pinion and juniper woodland, blooms April-June.	Moderate potential.	Not observed in 2007 or 2008 survey area.

# APPENDIX B

## Potential Species Occurring Within Solar I Project Vicinity

SPECIES		SENSITIVITY STATUS			HABITAT ASSOCIATIONS	POTENTIAL TO OCCUR	STATUS ON-SITE
Common Name	Scientific Name	Federal	State	CNPS			
Utah vine milkweed	<i>Cynanchum utahense</i>	None	None	4.3	Mojave desert scrub, blooms April-June.	Present.	Observed during 2008, but not 2007.
Mojave Tarplant	<i>Deinandra Mojavensis</i>	None	SE	1B	Chaparral, coastal scrub, riparian scrub, blooms June-October.	Low potential.	Not observed in 2007 or 2008 survey area.
Slender-horned spineflower	<i>Dodecahema leptoceras</i>	CE	None	1B	Chaparral, cismontane woodland, coastal scrub (alluvial fan), blooms April-June.	None.	Not observed in 2007 or 2008 survey area.
Barstow wooly sunflower	<i>Eriophyllum Mojavense</i>	None	None	1B	Chenopod scrub, Mojave desert scrub, playas, bloom April-May.	Low potential.	Not observed in 2007 or 2008 survey area.
Viviparous foxtail cactus	<i>Escobaria vivipara</i> var. <i>rosea</i>	None	None	2	Mojave desert scrub, pinyon and juniper woodland, blooms May-June.	Low potential.	Not observed in 2007 or 2008 survey area.
Sagebrush loeflingia	<i>Loeflingia squarrosa</i> var. <i>artemisiarum</i>	None	None	2	Desert dunes, Great Basin scrub, Sonoran desert scrub, blooms April-May.	Low potential.	Not observed in 2007 or 2008 survey area.
Creamy blazing star	<i>Mentzelia tridentata</i>	None	None	1B	Mojave desert scrub, bloom March-May.	Moderate potential.	Not observed in 2007 or 2008 survey area.
Mojave monkey flower	<i>Mimulus Mojavensis</i>	None	None	1B	Joshua tree woodland, Mojave desert scrub, blooms April-June.	Low potential.	Not observed in 2007 or 2008 survey area.
Short-joint	<i>Opuntia basilaris</i>	None	None	1B	Chaparral, Joshua tree woodland, Mojave	Low potential.	Not observed in 2007

## APPENDIX B

## Potential Species Occurring Within Solar I Project Vicinity

SPECIES		SENSITIVITY STATUS			HABITAT ASSOCIATIONS	POTENTIAL TO OCCUR	STATUS ON-SITE
Common Name	Scientific Name	Federal	State	CNPS			
beavertail cactus	<i>var. brachyclada</i>				desert scrub, pinion and juniper woodland, blooms April-June.		or 2008 survey area.
White-margined beardtongue	<i>Penstemon albomarginatus</i>	None	None	1B	Mojave desert scrub, blooms March-May.	Present.	Observed during 2008 survey, but not 2007.
Sky-blue phacelia	<i>Phacelia coerulea</i>	None	None	2	Mojave desert scrub, pinyon and juniper woodland, blooms April-May.	Moderate potential.	Not observed in 2007 or 2008 survey area.
Parish's phacelia	<i>Phacelia parishii</i>	None	None	1B	Mojave desert scrub, blooms April-May.	Moderate potential.	Not observed in 2007 or 2008 survey area.
Parish's popcornflower	<i>Plagiobothrys parishii</i>	None	None	1B	Desert scrub, Joshua tree woodland, blooms March-June.	Low potential.	Not observed in 2007 or 2008 survey area.
Mojave monkey flower	<i>Polygala acanthoclada</i>	None	None	2	Chenopod scrub, Joshua tree woodland, pinyon and juniper woodland, blooms May-August.	Low potential.	Not observed in 2007 or 2008 survey area.
Rusby's desert mallow	<i>Sphaeralcea rusbyi</i> var. <i>eremicola</i>	None	None	1B	Joshua tree woodland, Mojave desert scrub, blooms May-June.	Moderate potential.	Not observed in 2007 or 2008 survey area.

## APPENDIX B

## Potential Species Occurring Within Solar I Project Vicinity

SPECIES		SENSITIVITY STATUS			HABITAT ASSOCIATIONS	POTENTIAL TO OCCUR	STATUS ON-SITE
Common Name	Scientific Name	Federal	State	CNPS			
golden violet	<i>Viola aurea</i>	None	None	2	Sandy slopes, blooms April-June.	Low potential.	Not observed in 2007 or 2008 survey area.
Reptiles							
Desert tortoise	<i>Gopherus agassizii</i>	T	T	N/A	River washes, rocky hillsides, and flat desert having sandy or gravelly soil with creosote bush, burro bush, saltbush, Joshua tree, Mojave yucca, cacti, other shrubs, grasses, and wildflowers.	Present	Observed during 2007 and 2008 surveys.
rosy boa	<i>Lichanura trivirgata</i>	None	None	N/A	Arid scrublands, semi-arid shrublands, rocky deserts, desert oases, canyons, and rocky areas.	Moderate potential.	Not observed in 2007 or 2008 survey area.
Chuckwalla	<i>Sauromalus obesus</i>	SC	None	N/A	Desert rock outcrops surrounded by creosote brush scrub.	High potential. Numerous rocky outcrops in eastern portion of survey area.	Not observed in 2007 or 2008 survey area.
Mojave fringe-toed lizard	<i>Uma scoparia</i>	SC	SC	N/A	Areas of aeolian sands including dunes, flats with sandy hummocks, washes and banks of rivers.	Present.	Observed in 2008, but not in 2007.
Birds							
Golden Eagle	<i>Aquila chrysaetos</i>	None	SC	N/A	Desert scrub near cliff nest sites.	Present.	Fly-over observed in 2007 and 2008 surveys.

## APPENDIX B

## Potential Species Occurring Within Solar I Project Vicinity

SPECIES		SENSITIVITY STATUS			HABITAT ASSOCIATIONS	POTENTIAL TO OCCUR	STATUS ON-SITE
Common Name	Scientific Name	Federal	State	CNPS			
Burrowing owl	<i>Athene cunicularia</i>	SC	SC	N/A	Found in open grasslands and agricultural areas with suitable fossorial mammal burrows for nesting.	Present.	Observed in 2008, but not in 2007.
Swainson's Hawk	<i>Buteo swainsoni</i>	SC	T	N/A	Found in grasslands, prairies, and other wide-open ranges with minimal tree cover.	Present.	Observed in 2008, but not in 2007.
California horned lark	<i>Eremophila alpestris actia</i>	None	SC	N/A	Grasslands, areas of patchy desert scrub.	Present.	Observed in 2007 and 2008.
Prairie Falcon	<i>Falco mexicanus</i>	None	SC	N/A	Desert scrub near cliff nest sites.	Moderate potential.	Not observed in 2007 or 2008 survey area.
Loggerhead shrike	<i>Lanius ludovicianus</i>	SC	None	N/A	Desert, farmland; nests in cholla and thorny bushes.	Present	Observed in 2008, but not in 2007.
Black-tailed gnatcatcher	<i>Poliioptila melanura</i>	None	SC	N/A	Occurs in dry washes in low desert and arid country.	Moderate potential.	Not observed in 2007 or 2008 survey area.

## APPENDIX B

### Potential Species Occurring Within Solar I Project Vicinity

SPECIES		SENSITIVITY STATUS			HABITAT ASSOCIATIONS	POTENTIAL TO OCCUR	STATUS ON-SITE
Common Name	Scientific Name	Federal	State	CNPS			
Bendire's thrasher	<i>Toxostoma bendirei</i>	None	SC	N/A	Desert wash vegetation	Present.	Observed in 2008, but not in 2007.
Le Conte's thrasher	<i>Toxostoma lecontei</i>	None	SC	N/A	Desert washes where large shrubs occur for nesting.	Moderate potential	Not observed in 2007 or 2008 survey area.
Mammals							
Nelson's bighorn sheep	<i>Ovis canadensis nelsoni</i>	SC	None	N/A	Dry, relatively barren desert mountain ranges.	High potential.	Not observed in 2007 or 2008 survey area. Known to occur in area directly north of site.
Spotted bat	<i>Euderma maculatum</i>	SC	None	N/A	Associated with patchy vegetation with prominent rocky features, pinyon juniper and riparian forests.	Low potential.	Not observed in 2007 or 2008 survey area.
Western mastiff bat	<i>Eumops perotis</i>	None	None	N/A	Rocky areas and cliff faces, roosts in cliff crevices, buildings.	High potential for foraging individuals.	Not observed in 2007 or 2008 survey area.
Townsend's big-eared bat	<i>Plecotus townsendii</i>	None	None	N/A	Desert scrub and coniferous forests, roosts in caves, abandoned mines, and buildings.	High potential for foraging individuals	Observed in 2008, but not in 2007.

## APPENDIX B

### Potential Species Occurring Within Solar I Project Vicinity

SPECIES		SENSITIVITY STATUS			HABITAT ASSOCIATIONS	POTENTIAL TO OCCUR	STATUS ON-SITE
Common Name	Scientific Name	Federal	State	CNPS			
Pallid bat	<i>Antrozous pallidus</i>	BLM:S USFS:S	CDFG:SSC	N/A	Crevice of canyon walls or deep caves where temperatures are cool and constant.	Moderate potential.	Not observed in 2007 or 2008 survey area.
Mojave ground squirrel	<i>Spermophilus Mojavensis</i>	SC	ST	N/A	Mojave desert scrub west of Barstow.	Low potential	Not observed in 2007 or 2008 survey area. East of known distribution
American badger	<i>Taxidea taxus</i>	None	SC	N/A	Grasslands, savannas, and mountain meadows near timberline are preferred, but also occur in desert scrub areas.	Present.	Observed in Project area in 2008 but not in 2007.

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**Photograph #1**

March 11, 2008.

View from the hillside of the northeast corner of assessment area looking into the distance toward Interstate-40 and the Burlington Northern Santa Fe Railway (BNSF). Note the uniformity of Mojave creosote bush scrub habitat on the lower elevations of the site.



**Photograph #2**

March 26, 2008.

View of the overall assessment area from Interstate-40 looking in a northerly direction. Note the interspersed of desert pavement and volcanic rock among Mojave creosote bush scrub.



**Photograph #3**

March 24, 2007.

Desert pavement is scattered throughout the project site. Desert pavement is the arrangement of stones left behind as infrequent rain showers slowly wash away the supporting soil, leaving behind a layer of rocks.



**Photograph #4**

March 28, 2008.

View of mountains to the north from the area that was designated by the Bureau of Land Management as an Area of Critical Environmental Concern (ACEC). Portions of ACEC were surveyed along with the project assessment area.





**Photograph #5**

March 25, 2008.

Representative photo of desert dandelion (*Malacothrix glabrata*) found blooming in large swaths throughout Mojave creosote bush scrub found on-site.



**Photograph #6**

March 21, 2008.

The BNSF railway runs through the site in an east-west direction parallel to Interstate-40. Interstate-40 runs along the southern boundary of the project site.



**Photograph #7**

March 27, 2008.

View of the southeast corner of assessment area looking northwest. Note the prevalence and uniform distribution of creosote bush throughout the habitat; creosote bush is a dominant species in Mojave creosote bush scrub habitat.



**Photograph #8**

June 3, 2008.

Westward view from the foothills in the northwest corner of the assessment area. The topography of the project site is dominated by broad, flat valleys, but also includes portions of very steep terrain as pictured here.





**Photograph #9**

June 3, 2008.

Sandy, almost dune-like Mojave creosote bush scrub habitat. This type of habitat was found in isolated patches of the Assessment and ACEC areas and supports Mojave fringe-toed lizard.



**Photograph #10**

March 24, 2007.

A desert horned lizard (*Phrynosoma platyrhinos*) sunning itself on an overflow of tar from an adjacent road on the project site.



**Photograph #11**

March 13, 2008.

A desert horned lizard sitting outside of an ant mound waiting for a meal. Native ants are the horned lizard's primary food source.



**Photograph #12**

March 27, 2008.

Blooming beavertail cactus (*Opuntia basilaris* var. *basilaris*) in the foreground of a rocky hill typical of the Mojave creosote bush scrub habitat found on-site.





**Photograph #13**

April 3, 2008.

Partial glimpse of a desert tortoise (*Gopherus agassizii*) inside its typical half-moon shaped burrow. The light source seen in picture is provided by mirrors used by biologists to shine light inside burrows to determine presence of desert tortoise.



**Photograph #14**

April 3, 2008.

Desert tortoise found walking through an area of desert pavement. Note the abundance of native herbaceous plants surrounding the tortoise. Herbaceous plants are the tortoise's primary source of food.



**Photograph #15**

March 30, 2008.

A melanistic long-nosed leopard lizard (*Gambelia wislizenii*), sunning itself on an outcropping of volcanic rock in Mojave creosote bush scrub habitat.



**Photograph #16**

April 15, 2008.

Sand dunes in the ACEC forming along the southern face of a hill surrounded by Mojave creosote bush scrub. Windblown sand dunes with low-growing vegetation are the primary habitat type preferred by the Mojave fringe-toed lizard (*Uma scoparia*).





**Photograph #17**

June 5, 2008.

Mojave fringe-toed lizard found basking in the morning sun at the base of dead annual plants. Note the scat to the left of the lizard.



**Photograph #18**

March 20, 2008.

Cotton-top cactus (*Echinocactus polycephalus*) is one of several cacti species found throughout the Mojave creosote bush scrub habitat representative of the project site.





**Photograph #19**

March 31, 2008.

Desert tortoise found just as it was exiting its burrow. Presence of dirt on the shell could be indicative of fresh excavation activity.



**Photograph #20**

May 10, 2008.

Two desert tortoises found together. Note the long gular horn visible on the tortoise to the left; the pronounced length of the horn indicates that the tortoise is male. Also note the variation in shell color.



**Photograph #21**

March 20, 2008.

Desert tortoise plastron. The disarticulating scutes and carapace, and bleached (white) appearance of the shell are indicative of prolonged exposure to the elements.



**Photograph #22**

March 11, 2008.

An American badger (*Taxidea taxus*) seen near its burrow in Mojave creosote bush scrub habitat. Badgers are mostly nocturnal and are not typically seen during the day.



**Photograph #23**

March 17, 2008.

Small-flowered androstephium (*Androstephium breviflorum*) is a rare plant that was found during the 2008 survey, but not 2007. Rare plant surveys were repeated and expanded in 2008 due to very low recorded rainfall during 2007.

**Photograph #24**

March 20, 2008.

Picture of white-margined beardtongue (*Penstemon albomarginatus*) found in Mojave creosote bush scrub. Over 100 locations were detected on-site in 2008, but none in 2007.







Scientific Name	Common Name
<b>FLOWERING PLANTS</b>	
<b>MONOCOTS</b>	
<b>Poaceae</b>	<b>Grass Family</b>
<i>Achnatherum hymenoides</i>	Indian rice grass
<i>Achnatherum speciosum</i>	desert needlegrass
<i>Aristida purpurea</i> ssp. <i>neallyi</i>	Nealley's three-awn
<i>Bromus madritensis</i> ssp. <i>rubens</i> *	red fox-tail brome
<i>Erioneuron pulchellum</i>	Fluff grass
<i>Hordeum</i> sp.	barley
<i>Pleuraphis rigida</i>	galletta grass
<i>Schismus arabicus</i> *	Arabian schismus
<i>Schismus barbatus</i> *	Mediterranean grass
<b>Liliaceae</b>	<b>Lily Family</b>
<i>Androstephium breviflorum</i>	small-flowered androstephium
<i>Calochortus kennedyi</i>	desert mariposa lily
<i>Dichelostemma capitatum</i>	blue dicks
<i>Hesperocallis undulata</i>	desert lily
<i>Muilla coronata</i>	crowned muilla
<b>EUDICOTS</b>	
<b>Agavaceae</b>	<b>Agave Family</b>
<i>Yucca brevifolia</i>	Joshua tree
<i>Yucca schidigera</i>	Mojave yucca
<i>Yucca baccata</i>	Yucca baccata
<b>Apiaceae</b>	<b>Carrot Family</b>
<i>Cymopterus terebinthinus</i>	turpentine cymopterus
<i>Lomatium mohavense</i>	Mojave desert parsley
<b>Asclepiadaceae</b>	<b>Milkweed Family</b>
<i>Asclepias albicans</i>	wax milkweed
<i>Asclepias erosa</i>	desert milkweed
<i>Asclepias subulata</i>	rush milkweed
<i>Cynanchum utahense</i>	Utah vine milkweed
<i>Sarcostemma hirtellum</i>	rambling milkweed
<i>Sarcostemma cynanchoides</i>	fringed twine vine
<b>Asteraceae</b>	<b>Sunflower Family</b>
<i>Adenophyllum cooperi</i>	Cooper dyssodia
<i>Adenophyllum porophylloides</i>	San Felipe dyssodia
<i>Ambrosia dumosa</i>	white bur-sage
<i>Ambrosia X Hymenoclea</i>	
<i>Anisocoma acaulis</i>	scale bud
<i>Atrichoseris platyphylla</i>	tobacco weed
<i>Baileya multiradiata</i>	desert marigold
<i>Baileya pleniradiata</i>	woolly desert marigold
<i>Bebbia juncea</i>	sweetbush
<i>Brickellia californica</i>	Brickellbush

Scientific Name	Common Name
<i>Calycoseris parryi</i>	yellow tackstem
<i>Chaenactis carphoclinia</i>	pebble pincushion
<i>Chaenactis carphoclinia</i> var. <i>carphoclinia</i>	pebble pincushion
<i>Chaenactis fremontii</i>	desert pincushion
<i>Chaenactis stevioides</i>	desert pincushion
<i>Chrysothamnus nauseosus</i>	rubber rabbitbrush
<i>Chrysothamnus paniculatus</i>	black banded rabbitbrush
<i>Cirsium neomexicanum</i>	New Mexico thistle
<i>Dicoria canescens</i>	desert twinbugs
<i>Encelia actoni</i>	acton encelia
<i>Encelia farinosa</i>	brittlebush
<i>Encelia frutescens</i>	button brittlebush
<i>Eriophyllum wallacei</i>	Wallace's wooly daisy
<i>Filago depressa</i>	dwarf cottonrose
<i>Geraea canescens</i>	desert sunflower
<i>Glyptopleura marginata</i>	carveseed
<i>Hymenoclea salsola</i>	white burrobrush
<i>Isocoma acradenia</i>	alkali golden bush
<i>Isocoma acradenia</i> var. <i>eremophila</i>	alkali golden bush
<i>Lasthenia californica</i>	California goldfields
<i>Lepidospartum squamatum</i>	California broom sage
<i>Machaeranthera arida</i>	silver lake daisy
<i>Malacothrix californica</i>	California dandelion
<i>Malacothrix coulteri</i>	snake's head
<i>Malacothrix glabrata</i>	desert dandelion
<i>Monoptilon bellidiforme</i>	daisy desert star
<i>Monoptilon bellioides</i>	desert star
<i>Palafoxia arida</i>	Spanish needle
<i>Perityle emoryi</i>	Emory's rock daisy
<i>Peucephyllum schottii</i>	pygmy cedar
<i>Pleurocoronis pluriseta</i>	arrow leaf
<i>Porophyllum gracile</i>	odora
<i>Psilostrophe cooperi</i>	whitestem paperflower
<i>Rafinesquia neomexicana</i>	desert chicory
<i>Senecio mohavensis</i>	Mojave ragwort
<i>Stephanomeria exigua</i>	small wire lettuce
<i>Stephanomeria parryi</i>	Parry's wire lettuce
<i>Stephanomeria pauciflora</i>	desert straw
<i>Stephanomeria pauciflora</i> var. <i>pauciflora</i>	wire lettuce
<i>Tetradymia stenolepis</i>	Mojave cotton thorn
<i>Trichoptilium incisum</i>	yellow dome
<i>Xylorhiza tortifolia</i>	Mojave woody aster
<b>Bignoniaceae</b>	<b>Trumpet Creeper Family</b>
<i>Chilopsis linearis</i>	desert willow
<b>Boraginaceae</b>	<b>Borage Family</b>

Scientific Name	Common Name
<i>Amsinckia tessellata</i>	devil's lettuce
<i>Cryptantha angustifolia</i>	Panamint cryptantha
<i>Cryptantha barbigera</i>	bearded cryptantha
<i>Cryptantha circumscissa</i>	cushion cryptantha
<i>Cryptantha dumetorum</i>	bush-loving cryptantha
<i>Cryptantha holoptera</i>	winged cryptantha
<i>Cryptantha maritima</i>	Guadalupe cryptantha
<i>Cryptantha micrantha</i>	red root cryptantha
<i>Cryptantha nevadensis</i>	Nevada cryptantha
<i>Cryptantha pterocarya</i>	wing nut cryptantha
<i>Cryptantha utahensis</i>	scented cryptantha
<i>Pectocarya heterocarpa</i>	chuckwalla combseed
<i>Pectocarya penicillata</i>	winged pectocarya
<i>Pectocarya platycarpa</i>	broadfruit combseed
<i>Pectocarya recurvata</i>	curve nut combseet
<i>Phacelia crenulata</i>	notch-leafed phacelia
<i>Phacelia crenulata</i> var. <i>ambigua</i>	heliotrope phacelia
<i>Phacelia distans</i>	common phacelia
<i>Phacelia fremontii</i>	Fremont's phacelia
<i>Phacelia ivesiana</i>	Ives' phacelia
<i>Phacelia pachyphylla</i>	black tack phacelia
<i>Phacelia tanacetifolia</i>	lacy phacelila
<i>Plagiobothrys arizonicus</i>	Arizona popcorn flower
<i>Plagiobothrys jonesii</i>	Mojave popcorn flower
<i>Tiquilia nuttallii</i>	Nuttall's colenia
<i>Tiquilia plicata</i>	plicate colenia
<b>Brassicaceae</b>	<b>Mustard Family</b>
<i>Brassica tournefortii</i> *	African mustard
<i>Caulanthus inflatus</i>	desert candle
<i>Descurainia pinnata</i>	western tansy mustard
<i>Dithyrea californica</i>	California shieldpod
<i>Guillinia lasiophylla</i>	California mustard
<i>Lepidium flavum</i>	yellow pepper weed
<i>Lepidium fremontii</i>	desert pepper grass
<i>Lepidium lasiocarpum</i> var. <i>lasiocarpum</i>	sand peppergrass
<i>Sisymbrium irio</i> *	London rocket
<i>Streptanthella longirostris</i>	long beaked twist flower
<b>Cactaceae</b>	<b>Cactus Family</b>
<i>Cylindropuntia acanthocarpa</i>	buckhorn cholla
<i>Cylindropuntia echinocarpa</i>	silver cholla
<i>Cylindropuntia ramosissima</i>	diamond cholla
<i>Echinocactus polycephalus</i>	cotton-top cactus
<i>Echinocereus engelmannii</i>	Engelmann hedgehog
<i>Escobaria vivipara</i>	spiny star
<i>Ferocactus cylindraceus</i>	California barrel cactus

Scientific Name	Common Name
<i>Mammillaria tetrancistra</i>	fishhook cactus
<i>Opuntia basilaris</i> var. <i>basilaris</i>	beavertail cactus
<i>Opuntia chlorotica</i>	dollar joint pricklypear
<i>Opuntia erinacea</i> var. <i>erinacea</i>	grizzly bear pricklypear
<i>Cylindropuntia ramosissima</i>	branched pencil cholla
<b>Capparaceae</b>	<b>Caper Family</b>
<i>Cleomella obtusifolia</i>	mojave stinkweed
<b>Caryophyllaceae</b>	<b>Pink Family</b>
<i>Achyronichia cooperi</i>	onyx flower
<b>Chenopodiaceae</b>	<b>Chenopod Family</b>
<i>Allenrolfea occidentalis</i>	iodine bush
<i>Atriplex fruticulosa</i>	ball saltbush
<i>Atriplex canescens</i>	four-wing saltbush
<i>Atriplex elegans</i> var. <i>fasciculata</i>	wheelscale
<i>Atriplex hymenelytra</i>	desert holly
<i>Atriplex polycarpa</i>	desert saltbush
<i>Atriplex spinifera</i>	spinescale saltbush
<i>Cycloloma atriplicifolium</i>	tumble ringwing
<i>Krascheninnikovia lanata</i>	winter fat
<i>Salsola paulsenii</i>	barbwire Russian thistle
<i>Salsola tragus</i> *	Russian thistle
<i>Sarcobatus vermiculatus</i>	greasewood
<i>Suaeda moquinii</i>	inkweed
<b>Convolvulaceae</b>	<b>Morning glory Family</b>
<i>Cuscuta denticulata</i>	desert dodder
<b>Cucurbitaceae</b>	<b>Gourd Family</b>
<i>Cucurbita foetidissima</i>	Missouri gourd
<i>Cucurbita palmata</i>	coyote melon
<b>Cupressaceae</b>	<b>Cypress Family</b>
<i>Juniperus osteosperma</i>	Utah juniper
<b>Ephedraceae</b>	<b>Ephedra Family</b>
<i>Ephedra californica</i>	California ephedra
<i>Ephedra nevadensis</i>	Nevada ephedra
<i>Ephedra viridis</i>	green ephedra
<b>Euphorbiaceae</b>	<b>Spurge Family</b>
<i>Chamaesyce albomarginata</i>	white margined sandmat
<i>Chamaesyce polycarpa</i>	small seeded spurge
<i>Croton californicus</i>	California croton
<i>Ditaxis lanceolata</i>	lance leaved ditaxis
<i>Stillingia spinulosa</i>	annual toothleaf
<b>Fabaceae</b>	<b>Legume Family</b>
<i>Acacia greggii</i>	cat-claw acacia
<i>Astragalus didymocarpus</i>	two-seeded milkvetch
<i>Astragalus layneae</i>	Layne's milkvetch
<i>Astragalus lentiginosus</i>	freckled milkvetch

Scientific Name	Common Name
<i>Lotus rigidus</i>	desert senna
<i>Lotus salsuginosus</i>	shrubby deer vetch
<i>Lotus strigosus</i>	coastal lotus
<i>Lupinus arizonicus</i>	strigose bird's-foot trefoil
<i>Lupinus concinnus</i>	Arizona lupine
<i>Lupinus shockleyi</i>	elegant lupine
<i>Parkinsonia aculeata</i> *	desert lupine
<i>Prosopis glandulosa</i> var. <i>torreyana</i>	Mexican palo verde
<i>Psoralea fremontii</i> var. <i>fremontii</i>	mesquite
<i>Psoralea spinosa</i>	Fremont's dalea
<i>Senna armata</i>	smoke tree
<i>Senna covesii</i>	desert senna
<b>Geraniaceae</b>	<b>Geranium Family</b>
<i>Erodium cicutarium</i> *	red stem filaree
<i>Erodium texanum</i>	Texas filaree
<b>Hydrophyllaceae</b>	<b>Waterleaf Family</b>
<i>Eucrypta micrantha</i>	desert eucrypta
<i>Nama aretioides</i>	ground nama
<i>Nama californicum</i>	California fiddleleaf
<i>Nama demissum</i>	desert purple mat
<i>Phacelia rotundifolia</i>	round-leaved phacelia
<b>Krameriaceae</b>	<b>Krameria Family</b>
<i>Krameria erecta</i>	little leaved ratany
<i>Krameria grayi</i>	white ratany
<b>Lamiaceae</b>	<b>Mint Family</b>
<i>Salazaria mexicana</i>	bladder-sage
<i>Salvia columbariae</i>	chia
<i>Salvia dorrii</i> ssp. <i>Dorrii</i>	purple sage
<i>Salvia mohavensis</i>	Mojave sage
<b>Loasaceae</b>	<b>Loasa Family</b>
<i>Eucnide urens</i>	desert rock nettle
<i>Mentzelia albicaulis</i>	blazing star
<i>Mentzelia involucrata</i>	sand blazing star
<i>Mentzelia obscura</i>	pacific blazing star
<i>Mentzelia veitchiana</i>	Veatch's blazing star
<i>Petalonyx thurberi</i>	sandpaper plant
<i>Petalonyx thurberi</i> ssp. <i>thurberi</i>	Thurber's sandpaper plant
<b>Malvaceae</b>	<b>Mallow Family</b>
<i>Eremalche exilis</i>	white mallow
<i>Eremalche rotundiflora</i>	desert five spot
<i>Sphaeralcea ambigua</i>	desert globe mallow
<b>Nyctaginaceae</b>	<b>Four O'Clock Family</b>
<i>Abronia villosa</i>	sand verbena
<i>Abronia villosa</i> var. <i>villosa</i>	sand verbena
<i>Allionia incarnata</i>	trailing windmills

Scientific Name	Common Name
<i>Tripterocalyx micranthus</i>	small-flowered sand verbena
<b>Onagraceae</b>	<b>Evening Primrose Family</b>
<i>Camissonia boothii</i> ssp. <i>condenseta</i>	Booth's evening primrose
<i>Camissonia boothii</i> ssp. <i>desertorum</i>	Booth's desert primrose
<i>Camissonia brevipes</i>	yellow cups
<i>Camissonia claviformis</i>	brown-eyed primrose
<i>Camissonia claviformis</i> ssp. <i>claviformis</i>	clavate-fruited primrose
<i>Camissonia refracta</i>	narrow leaf suncup
<i>Epilobium canum</i>	California fuchsia
<i>Oenothera deltoides</i>	dune primrose
<i>Oenothera primiveris</i>	yellow desert evening primrose
<b>Orobanchaceae</b>	<b>Broomrape Family</b>
<i>Orobanche cooperi</i>	desert broomrape
<b>Papaveraceae</b>	<b>Poppy Family</b>
<i>Argemone corymbosa</i>	Mojave prickly poppy
<i>Argemone munita</i>	chicalote
<i>Eschscholzia glyptosperma</i>	desert gold poppy
<i>Eschscholzia minutiflora</i>	pygmy poppy
<b>Plantaginaceae</b>	<b>Plantain Family</b>
<i>Plantago ovata</i>	wooly plantain
<b>Polemoniaceae</b>	<b>Phlox Family</b>
<i>Eriastrum eremicum</i>	desert wollystar
<i>Gilia latiflora</i>	hollyleaf gilia
<i>Gilia latiflora</i> ssp. <i>daveyi</i>	broadleaf gilia
<i>Gilia brecciarum</i>	Nevada gilia
<i>Gilia sinuata</i>	rosy gilia
<i>Gilia stellata</i>	star gilia
<i>Gilia subacaulis</i>	pinyon gilia
<i>Langlosia setosissima</i> ssp. <i>punctata</i>	Great Basin langlosia
<i>Linanathus jonesii</i>	Jones linanthus
<i>Loeseliastrum matthewsii</i>	desert calico
<i>Loeseliastrum schottii</i>	Schott's calico
<b>Polygonaceae</b>	<b>Buckwheat Family</b>
<i>Chorizanthe brevicornu</i>	brittle spineflower
<i>Chorizanthe brevicornu</i> var. <i>brevicornu</i>	brittle spineflower
<i>Chorizanthe rigida</i>	spiny-herb
<i>Eriogonum brachypodum</i>	Parry's buckwheat
<i>Eriogonum deflexum</i>	skeleton weed
<i>Eriogonum fasciculatum</i>	yellow buckwheat
<i>Eriogonum inflatum</i>	desert trumpet
<i>Eriogonum inflatum</i> var. <i>deflatum</i>	desert trumpet
<i>Eriogonum inflatum</i> var. <i>inflatum</i>	desert trumpet
<i>Eriogonum pusillum</i>	yellow turban
<i>Eriogonum thomasii</i>	Thomas' buckwheat
<i>Eriogonum trichopes</i>	little trumpet



Scientific Name	Common Name
<i>Rumex hymenosepalus</i>	canaigre dock
<b>Portulacaceae</b>	<b>Purslane Family</b>
<i>Calyptidium monandrum</i>	pussypaws
<b>Resedaceae</b>	<b>Mignonette Family</b>
<i>Oligomeris linifolia</i>	leaved cambess
<b>Rosaceae</b>	<b>Rose Family</b>
<i>Coleogyne rammosissima</i>	blackbrush
<i>Prunus fasciculata</i>	desert almond
<b>Rutaceae</b>	<b>Citrus Family</b>
<i>Thamnosma montana</i>	turpentinebroom
<b>Scrophulariaceae</b>	<b>Figwort Family</b>
<i>Antirrhinum filipes</i>	twining snapdragon
<i>Mimulus bigelovii</i>	Bigelow's monkeyflower
<i>Mohavea breviflora</i>	golden desert snapdragon
<i>Mohavea confertiflora</i>	ghost flower
<i>Penstemon albomarginatus</i>	white margin beardtongue
<b>Simaroubaceae</b>	<b>Quassia Family</b>
<i>Castela emoryi</i>	Emory's crucifixion thorn
<b>Solanaceae</b>	<b>Nightshade Family</b>
<i>Datura wrightii</i>	jimson weed
<i>Lycium andersonii</i>	Anderson thornbush
<i>Lycium pallidum</i>	pale desert-thorn
<i>Nicotiana obtusifolia</i>	desert tobacco
<i>Physalis crassifolia</i>	yellow nightshade groundcherry
<b>Tamaricaceae</b>	<b>Tamarix Family</b>
<i>Tamarix aphylla</i> *	athel tamarisk
<i>Tamarix ramosissima</i> *	salt-cedar
<b>Verbenaceae</b>	<b>Vervain Family</b>
<i>Verbenia gooddingii</i>	southwestern mock vervain
<b>Viscaceae</b>	<b>Mistletoe Family</b>
<i>Phoradendron californicum</i>	mesquite mistletoe
<b>Zygophyllaceae</b>	<b>Caltrop Family</b>
<i>Larrea tridentata</i>	creosote bush

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Scientific Name	Common Name
<b>Invertebrates</b>	
<i>Apodemia virgulti</i>	Behr's metalmark
<i>Atlides halesus</i>	great purple hairstreak
<i>Brephidium exile</i>	western pygmy-blue
<i>Colias eurytheme</i>	orange sulphur
Family Acrididae	grasshopper
<i>Glaucopsyche lygdamus</i>	silvery blue
<i>Pogonomyrmex</i> sp.	harvester ant
<i>Pontia protodice</i>	checkered white butterfly
<i>Anthocharis cethura</i>	desert orangetip
<b>Reptiles</b>	
<i>Callisaurus draconoides</i>	zebra-tailed lizard
<i>Cnemidophorus tigris</i>	western whiptail
<i>Coleonyx variegatus</i>	western banded gecko
<i>Crotalus scutulatus</i>	Mojave rattlesnake
<i>Crotalus cerastes</i>	sidewinder
<i>Dipsosaurus dorsalis</i>	desert iguana
<i>Gambelia wislizenii</i>	long-nosed leopard lizard
<i>Gopherus agassizii</i>	desert tortoise
<i>Masticophis flagellum</i>	coachwhip
<i>Phrynosoma platyrhinos</i>	desert horned lizard
<i>Salvadora hexalepis</i>	western patch-nosed snake
<i>Sceloporus occidentalis</i>	western fence lizard
<i>Uma scorparia</i>	Mojave fringe-toed lizard
<i>Uta stansburiana</i>	common side blotched lizard
<b>Mammals</b>	
<i>Canis latrans</i>	coyote
<i>Dipodomys deserti</i>	desert kangaroo rat
<i>Lepus californicus</i>	black-tailed jackrabbit
<i>Neotoma</i> sp.	woodrat
<i>Spermophilus tereticaudus</i>	round-tailed ground squirrel
<i>Sylvilagus audubonii</i>	desert cottontail
<i>Taxidea taxus</i>	American badger
<i>Lynx rufus</i>	bobcat
<i>Vulpes macrotis</i>	kit fox
<b>Birds</b>	
<i>Amphispiza bilineata</i>	black-throated sparrow
<i>Amphispiza belli</i>	sage sparrow
<i>Aquila chrysaetos</i>	golden eagle
<i>Athene cunicularia</i>	burrowing owl
<i>Buteo jamaicensis</i>	red-tailed hawk
<i>Buteo swainsoni</i>	Swainson's hawk
<i>Callipepla californica</i>	California quail
<i>Carpodacus mexicanus</i>	house finch



Scientific Name	Common Name
<i>Cathartes aura</i>	turkey vulture
<i>Chordeiles minor</i>	common nighthawk
<i>Corvus corax</i>	common raven
<i>Dendroica coronata</i>	yellow-rumped warbler
<i>Eremophila alpestris actia</i>	California horned lark
<i>Geococcyx californianus</i>	greater roadrunner
<i>Junco hyemalis</i>	dark-eyed junco
<i>Lanius ludovicianus</i>	loggerhead shrike
<i>Mimus polyglottos</i>	northern mockingbird
<i>Myiarchus cinerascens</i>	ash-throated flycatcher
<i>Phainopepla nitens</i>	phainopepla
<i>Picoides scalaris</i>	ladder-back woodpecker
<i>Poecile gambeli</i>	mountain chickadee
<i>Regulus calendula</i>	ruby-crowned kinglet
<i>Salpinctes obsoletus</i>	rock wren
<i>Sayornis nigricans</i>	black phoebe
<i>Sayornis saya</i>	Say's phoebe
<i>Spizella passerina</i>	chipping sparrow
<i>Stelgidopteryx serripennis</i>	northern rough-winged swallow
<i>Sturnella neglecta</i>	western meadowlark
<i>Tachycineta thalassina</i>	violet-green swallow
<i>Thryomanes bewickii</i>	Bewick's wren
<i>Toxostoma bendirei</i>	Bendire's thrasher
<i>Toxostoma redivivum</i>	California thrasher
<i>Turdus migratorius</i>	American robin
<i>Tyrannus verticalis</i>	western kingbird
<i>Zenaida macroura</i>	mourning dove
<i>Zonotrichia leucophrys</i>	white-crowned sparrow





**California Natural Diversity Database (CNDDB) Data**  
**California Native Species Locations**

YEAR	Scientific Name	Common Name	UTM Coordinates (11S WGS84)		USGS 7.5-Minute California Topographic Quadrangle Name	MERIDIAN	TOWNSHIP	RANGE	SECTION	ELEVATION (ft)
			X	Y						
2007	<i>Gopherus agassizii</i>	desert tortoise	539458	3833934	SILVER BELL MINE	SBB&M	06N	04E	4	3976.9
2007	<i>Gopherus agassizii</i>	desert tortoise	547964	3840192	SUNSHINE PEAK	SBB&M	07N	05E	17	2909.8
2007	<i>Gopherus agassizii</i>	desert tortoise	548795	3841026	SUNSHINE PEAK	SBB&M	07N	05E	9	2676.6
2007	<i>Gopherus agassizii</i>	desert tortoise	557106	3851143	HECTOR	SBB&M	08N	06E	8	2165.3
2007	<i>Gopherus agassizii</i>	desert tortoise	558092	3851950	SLEEPING BEAUTY	SBB&M	08N	06E	5	2307.3
2007	<i>Gopherus agassizii</i>	desert tortoise	546149	3852357	HECTOR	SBB&M	08N	05E	6	1909.0
2007	<i>Gopherus agassizii</i>	desert tortoise	558989	3852394	SLEEPING BEAUTY	SBB&M	08N	06E	4	2408.1
2007	<i>Gopherus agassizii</i>	desert tortoise	556775	3852763	HECTOR	SBB&M	08N	06E	5	2280.1
2007	<i>Gopherus agassizii</i>	desert tortoise	559053	3852988	SLEEPING BEAUTY	SBB&M	08N	06E	4	2492.3
2007	<i>Gopherus agassizii</i>	desert tortoise	557545	3853168	SLEEPING BEAUTY	SBB&M	08N	06E	5	2400.9
2007	<i>Gopherus agassizii</i>	desert tortoise	555790	3853277	HECTOR	SBB&M	08N	06E	6	2264.6
2007	<i>Gopherus agassizii</i>	desert tortoise	551339	3853495	HECTOR	SBB&M	09N	05E	34	2042.4
2007	<i>Gopherus agassizii</i>	desert tortoise	552623	3853495	HECTOR	SBB&M	09N	05E	35	2137.0
2007	<i>Gopherus agassizii</i>	desert tortoise	556039	3853517	HECTOR	SBB&M	09N	06E	31	2333.4
2007	<i>Gopherus agassizii</i>	desert tortoise	556859	3853528	HECTOR	SBB&M	09N	06E	32	2376.3

YEAR	Scientific Name	Common Name	UTM Coordinates (11S WGS84)		USGS 7.5-Minute California Topographic Quadrangle Name	MERIDIAN	TOWNSHIP	RANGE	SECTION	ELEVATION (ft)
			X	Y						
2007	<i>Gopherus agassizii</i>	desert tortoise	550772	3853730	HECTOR	SBB&M	09N	05E	34	2009.5
2007	<i>Gopherus agassizii</i>	desert tortoise	553684	3853843	HECTOR	SBB&M	09N	05E	36	2217.8
2007	<i>Gopherus agassizii</i>	desert tortoise	554389	3853872	HECTOR	SBB&M	09N	05E	36	2251.7
2007	<i>Gopherus agassizii</i>	desert tortoise	550611	3853892	HECTOR	SBB&M	09N	05E	34	2015.6
2007	<i>Gopherus agassizii</i>	desert tortoise	553938	3853893	HECTOR	SBB&M	09N	05E	36	2233.3
2007	<i>Gopherus agassizii</i>	desert tortoise	558338	3853929	SLEEPING BEAUTY	SBB&M	09N	06E	33	2607.2
2007	<i>Gopherus agassizii</i>	desert tortoise	553926	3853936	HECTOR	SBB&M	09N	05E	36	2236.3
2007	<i>Gopherus agassizii</i>	desert tortoise	556694	3853952	HECTOR	SBB&M	09N	06E	32	2433.4
2007	<i>Gopherus agassizii</i>	desert tortoise	554517	3853972	HECTOR	SBB&M	09N	05E	36	2274.5
2007	<i>Gopherus agassizii</i>	desert tortoise	556672	3854451	HECTOR	SBB&M	09N	06E	32	2521.1
2007	<i>Gopherus agassizii</i>	desert tortoise	553613	3854484	HECTOR	SBB&M	09N	05E	36	2303.1
2007	<i>Gopherus agassizii</i>	desert tortoise	553600	3854488	HECTOR	SBB&M	09N	05E	36	2303.1
2007	<i>Gopherus agassizii</i>	desert tortoise	551083	3854878	HECTOR	SBB&M	09N	05E	34	2117.0
2007	<i>Gopherus agassizii</i>	desert tortoise	553497	3854878	HECTOR	SBB&M	09N	05E	36	2356.0
2007	<i>Gopherus agassizii</i>	desert tortoise	552754	3854925	HECTOR	SBB&M	09N	05E	35	2294.3
2007	<i>Gopherus agassizii</i>	desert tortoise	554645	3854940	HECTOR	SBB&M	09N	05E	36	2454.9
2007	<i>Gopherus agassizii</i>	desert tortoise	553409	3854955	HECTOR	SBB&M	09N	05E	25	2361.4

YEAR	Scientific Name	Common Name	UTM Coordinates (11S WGS84)		USGS 7.5-Minute California Topographic Quadrangle Name	MERIDIAN	TOWNSHIP	RANGE	SECTION	ELEVATION (ft)
			X	Y						
2007	<i>Gopherus agassizii</i>	desert tortoise	550394	3854999	HECTOR	SBB&M	09N	05E	27	2094.8
2007	<i>Gopherus agassizii</i>	desert tortoise	548526	3855548	HECTOR	SBB&M	09N	05E	28	1976.8
2007	<i>Gopherus agassizii</i>	desert tortoise	548523	3855926	HECTOR	SBB&M	09N	05E	28	1997.4
2008	<i>Gopherus agassizii</i>	desert tortoise	552739	3843608	SUNSHINE PEAK	SBB&M	07N	05E	2	2041.9
2008	<i>Gopherus agassizii</i>	desert tortoise	561730	3846758	SLEEPING BEAUTY	SBB&M	08N	06E	26	2445.0
2008	<i>Gopherus agassizii</i>	desert tortoise	561706	3846787	SLEEPING BEAUTY	SBB&M	08N	06E	26	2443.0
2008	<i>Gopherus agassizii</i>	desert tortoise	561654	3846832	SLEEPING BEAUTY	SBB&M	08N	06E	26	2426.0
2008	<i>Gopherus agassizii</i>	desert tortoise	561241	3846894	SLEEPING BEAUTY	SBB&M	08N	06E	27	2372.3
2008	<i>Gopherus agassizii</i>	desert tortoise	562294	3847001	SLEEPING BEAUTY	SBB&M	08N	06E	26	2567.7
2008	<i>Gopherus agassizii</i>	desert tortoise	562095	3847050	SLEEPING BEAUTY	SBB&M	08N	06E	26	2519.1
2008	<i>Gopherus agassizii</i>	desert tortoise	562078	3847059	SLEEPING BEAUTY	SBB&M	08N	06E	23	2513.2
2008	<i>Gopherus agassizii</i>	desert tortoise	561392	3847062	SLEEPING BEAUTY	SBB&M	08N	06E	22	2392.8
2008	<i>Gopherus agassizii</i>	desert tortoise	562275	3847110	SLEEPING BEAUTY	SBB&M	08N	06E	23	2572.5
2008	<i>Gopherus agassizii</i>	desert tortoise	562425	3847156	SLEEPING BEAUTY	SBB&M	08N	06E	23	2598.4
2008	<i>Gopherus agassizii</i>	desert tortoise	562704	3847195	SLEEPING BEAUTY	SBB&M	08N	06E	23	2609.2
2008	<i>Gopherus agassizii</i>	desert tortoise	558189	3850865	SLEEPING BEAUTY	SBB&M	08N	06E	9	2224.4
2008	<i>Gopherus agassizii</i>	desert tortoise	558261	3850896	SLEEPING BEAUTY	SBB&M	08N	06E	9	2228.7
2008	<i>Gopherus agassizii</i>	desert tortoise	558282	3850920	SLEEPING BEAUTY	SBB&M	08N	06E	9	2231.8



YEAR	Scientific Name	Common Name	UTM Coordinates (11S WGS84)		USGS 7.5-Minute California Topographic Quadrangle Name	MERIDIAN	TOWNSHIP	RANGE	SECTION	ELEVATION (ft)
			X	Y						
2008	<i>Gopherus agassizii</i>	desert tortoise	560497	3851212	SLEEPING BEAUTY	SBB&M	08N	06E	10	2402.9
2008	<i>Gopherus agassizii</i>	desert tortoise	560496	3851212	SLEEPING BEAUTY	SBB&M	08N	06E	10	2402.8
2008	<i>Gopherus agassizii</i>	desert tortoise	555873	3853267	HECTOR	SBB&M	08N	06E	6	2269.0
2008	<i>Gopherus agassizii</i>	desert tortoise	557350	3853438	SLEEPING BEAUTY	SBB&M	09N	06E	32	2416.6
2008	<i>Gopherus agassizii</i>	desert tortoise	555205	3853502	HECTOR	SBB&M	09N	06E	31	2246.4
2008	<i>Gopherus agassizii</i>	desert tortoise	552760	3853587	HECTOR	SBB&M	09N	05E	35	2155.5
2008	<i>Gopherus agassizii</i>	desert tortoise	546450.6	3853712	HECTOR	SBB&M	09N	05E	31	1867.4
2008	<i>Gopherus agassizii</i>	desert tortoise	546004	3855236	HECTOR	SBB&M	09N	05E	30	1973.4
2008	<i>Gopherus agassizii</i>	desert tortoise	548522	3855926	HECTOR	SBB&M	09N	05E	28	1997.3
2008	<i>Gopherus agassizii</i>	desert tortoise	548623	3857027	HECTOR	SBB&M	09N	05E	21	2069.0
2008	<i>Gopherus agassizii</i>	desert tortoise	548898	3857156	HECTOR	SBB&M	09N	05E	21	2096.9
2008	<i>Taxidea taxus</i>	American badger	558119	3854759	SLEEPING BEAUTY	SBB&M	09N	06E	33	2654.5
2008	<i>Toxostoma bendirei</i>	Bendire's thrasher	545778.1	3855391	HECTOR	SBB&M	09N	05E	30	2054.2
2008	<i>Athene cunicularia</i>	burrowing owl	557947	3849803	SLEEPING BEAUTY	SBB&M	08N	06E	17	2165.4
2008	<i>Athene cunicularia</i>	burrowing owl	556198	3853342	HECTOR	SBB&M	08N	06E	6	2299.9
2008	<i>Athene cunicularia</i>	burrowing owl	555873	3854840	HECTOR	SBB&M	09N	06E	31	2553.4
2008	<i>Castela emoryi</i>	crucifixion thorn	561126	3846222	SLEEPING BEAUTY	SBB&M	08N	06E	27	2324.2

YEAR	Scientific Name	Common Name	UTM Coordinates (11S WGS84)		USGS 7.5-Minute California Topographic Quadrangle Name	MERIDIAN	TOWNSHIP	RANGE	SECTION	ELEVATION (ft)
			X	Y						
2008	<i>Castela emoryi</i>	crucifixion thorn	561146	3846246	SLEEPING BEAUTY	SBB&M	08N	06E	27	2321.9
2008	<i>Castela emoryi</i>	crucifixion thorn	555218	3854719	HECTOR	SBB&M	09N	06E	31	2446.8
2008	<i>Uma scoparia</i>	Mojave fringe-toed lizard	563891	3846658	SLEEPING BEAUTY	SBB&M	08N	06E	25	2476.9
2008	<i>Uma scoparia</i>	Mojave fringe-toed lizard	563922	3846777	SLEEPING BEAUTY	SBB&M	08N	06E	25	2482.6
2008	<i>Uma scoparia</i>	Mojave fringe-toed lizard	563921	3846813	SLEEPING BEAUTY	SBB&M	08N	06E	25	2483.5
2008	<i>Uma scoparia</i>	Mojave fringe-toed lizard	563942	3846827	SLEEPING BEAUTY	SBB&M	08N	06E	25	2489.3
2008	<i>Uma scoparia</i>	Mojave fringe-toed lizard	564008	3847062	SLEEPING BEAUTY	SBB&M	08N	06E	24	2525.3
2008	<i>Uma scoparia</i>	Mojave fringe-toed lizard	563150	3847131	SLEEPING BEAUTY	SBB&M	08N	06E	24	2497.0
2008	<i>Uma scoparia</i>	Mojave fringe-toed lizard	563990	3847147	SLEEPING BEAUTY	SBB&M	08N	06E	24	2540.5
2008	<i>Uma scoparia</i>	Mojave fringe-toed lizard	563012	3849144	SLEEPING BEAUTY	SBB&M	08N	06E	13	2613.8
2008	<i>Uma scoparia</i>	Mojave fringe-toed lizard	563002	3849155	SLEEPING BEAUTY	SBB&M	08N	06E	13	2641.0
2008	<i>Uma scoparia</i>	Mojave fringe-toed lizard	563027	3849184	SLEEPING BEAUTY	SBB&M	08N	06E	13	2652.1
2008	<i>Uma scoparia</i>	Mojave fringe-toed lizard	562984	3849188	SLEEPING BEAUTY	SBB&M	08N	06E	13	2703.2
2008	<i>Uma scoparia</i>	Mojave fringe-toed lizard	562982	3849189	SLEEPING BEAUTY	SBB&M	08N	06E	13	2706.0
2008	<i>Uma scoparia</i>	Mojave fringe-toed lizard	563070	3849221	SLEEPING BEAUTY	SBB&M	08N	06E	13	2638.2
2008	<i>Uma scoparia</i>	Mojave fringe-toed lizard	563035	3849272	SLEEPING BEAUTY	SBB&M	08N	06E	13	2706.5
2008	<i>Uma scoparia</i>	Mojave fringe-toed lizard	559931	3850143	SLEEPING BEAUTY	SBB&M	08N	06E	15	2319.0

YEAR	Scientific Name	Common Name	UTM Coordinates (11S WGS84)		USGS 7.5-Minute California Topographic Quadrangle Name	MERIDIAN	TOWNSHIP	RANGE	SECTION	ELEVATION (ft)
			X	Y						
2008	<i>Uma scoparia</i>	Mojave fringe-toed lizard	560002	3850158	SLEEPING BEAUTY	SBB&M	08N	06E	15	2309.7
2008	<i>Uma scoparia</i>	Mojave fringe-toed lizard	559849	3850176	SLEEPING BEAUTY	SBB&M	08N	06E	15	2358.1
2008	<i>Uma scoparia</i>	Mojave fringe-toed lizard	559874	3850183	SLEEPING BEAUTY	SBB&M	08N	06E	15	2344.2
2008	<i>Uma scoparia</i>	Mojave fringe-toed lizard	554464	3850202	HECTOR	SBB&M	08N	05E	12	2011.1
2008	<i>Uma scoparia</i>	Mojave fringe-toed lizard	559879	3850224	SLEEPING BEAUTY	SBB&M	08N	06E	10	2344.2
2008	<i>Uma scoparia</i>	Mojave fringe-toed lizard	545694	3856588	TROY LAKE	SBB&M	09N	05E	19	1990.2
2008	<i>Uma scoparia</i>	Mojave fringe-toed lizard	545658	3856609	TROY LAKE	SBB&M	09N	05E	19	2016.6
2008	<i>Uma scoparia</i>	Mojave fringe-toed lizard	545640	3856621	TROY LAKE	SBB&M	09N	05E	19	2022.8
2008	<i>Uma scoparia</i>	Mojave fringe-toed lizard	545856	3857122	HECTOR	SBB&M	09N	05E	19	1991.5
2008	<i>Androstephium breviflor</i>	small-flowered androstephium	547989	3840369	SUNSHINE PEAK	SBB&M	07N	05E	17	2875.3
2008	<i>Androstephium breviflor</i>	small-flowered androstephium	561206	3845606	SLEEPING BEAUTY	SBB&M	08N	06E	27	2254.0
2008	<i>Androstephium breviflor</i>	small-flowered androstephium	562749	3845657	SLEEPING BEAUTY	SBB&M	08N	06E	26	2404.8
2008	<i>Androstephium breviflor</i>	small-flowered androstephium	560701	3845767	SLEEPING BEAUTY	SBB&M	08N	06E	27	2217.2
2008	<i>Androstephium breviflor</i>	small-flowered androstephium	563092	3845782	SLEEPING BEAUTY	SBB&M	08N	06E	25	2452.3
2008	<i>Androstephium breviflor</i>	small-flowered androstephium	561990	3845889	SLEEPING BEAUTY	SBB&M	08N	06E	26	2359.1
2008	<i>Androstephium breviflor</i>	small-flowered androstephium	562467	3846158	SLEEPING BEAUTY	SBB&M	08N	06E	26	2475.1
2008	<i>Androstephium breviflor</i>	small-flowered androstephium	560004	3846582	SLEEPING BEAUTY	SBB&M	08N	06E	27	2211.7

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			X	Y						
2008	<i>Androstaphyium breviflor</i>	small-flowered androstephium	559745	3846676	SLEEPING BEAUTY	SBB&M	08N	06E	28	2201.6
2008	<i>Androstaphyium breviflor</i>	small-flowered androstephium	562290	3846711	SLEEPING BEAUTY	SBB&M	08N	06E	26	2492.6
2008	<i>Androstaphyium breviflor</i>	small-flowered androstephium	561206	3846723	SLEEPING BEAUTY	SBB&M	08N	06E	27	2355.9
2008	<i>Androstaphyium breviflor</i>	small-flowered androstephium	561333	3846731	SLEEPING BEAUTY	SBB&M	08N	06E	27	2367.6
2008	<i>Androstaphyium breviflor</i>	small-flowered androstephium	562732	3846764	SLEEPING BEAUTY	SBB&M	08N	06E	26	2542.1
2008	<i>Androstaphyium breviflor</i>	small-flowered androstephium	561174	3846919	SLEEPING BEAUTY	SBB&M	08N	06E	27	2373.0
2008	<i>Androstaphyium breviflor</i>	small-flowered androstephium	561592	3846947	SLEEPING BEAUTY	SBB&M	08N	06E	26	2423.4
2008	<i>Androstaphyium breviflor</i>	small-flowered androstephium	559998	3847095	SLEEPING BEAUTY	SBB&M	08N	06E	22	2241.3
2008	<i>Androstaphyium breviflor</i>	small-flowered androstephium	560005	3847105	SLEEPING BEAUTY	SBB&M	08N	06E	22	2240.8
2008	<i>Androstaphyium breviflor</i>	small-flowered androstephium	561375	3847106	SLEEPING BEAUTY	SBB&M	08N	06E	22	2389.7
2008	<i>Androstaphyium breviflor</i>	small-flowered androstephium	560029	3847134	SLEEPING BEAUTY	SBB&M	08N	06E	22	2243.5
2008	<i>Androstaphyium breviflor</i>	small-flowered androstephium	560216	3847207	SLEEPING BEAUTY	SBB&M	08N	06E	22	2267.1
2008	<i>Androstaphyium breviflor</i>	small-flowered androstephium	560170	3847224	SLEEPING BEAUTY	SBB&M	08N	06E	22	2263.8
2008	<i>Androstaphyium breviflor</i>	small-flowered androstephium	560270	3847270	SLEEPING BEAUTY	SBB&M	08N	06E	22	2273.2
2008	<i>Androstaphyium breviflor</i>	small-flowered androstephium	560182	3847304	SLEEPING BEAUTY	SBB&M	08N	06E	22	2270.9
2008	<i>Androstaphyium breviflor</i>	small-flowered androstephium	563156	3847326	SLEEPING BEAUTY	SBB&M	08N	06E	24	2499.2
2008	<i>Androstaphyium breviflor</i>	small-flowered androstephium	564540	3847516	SLEEPING BEAUTY	SBB&M	08N	06E	24	2645.4

YEAR	Scientific Name	Common Name	UTM Coordinates (11S WGS84)		USGS 7.5-Minute California Topographic Quadrangle Name	MERIDIAN	TOWNSHIP	RANGE	SECTION	ELEVATION (ft)
			X	Y						
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	556708	3847743	HECTOR	SBB&M	08N	06E	20	2148.9
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	560412	3847774	SLEEPING BEAUTY	SBB&M	08N	06E	22	2303.1
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	561171	3847813	SLEEPING BEAUTY	SBB&M	08N	06E	22	2355.6
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	561668	3847820	SLEEPING BEAUTY	SBB&M	08N	06E	23	2408.1
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	561629	3847820	SLEEPING BEAUTY	SBB&M	08N	06E	23	2408.1
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	561728	3847859	SLEEPING BEAUTY	SBB&M	08N	06E	23	2411.2
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	561594	3847869	SLEEPING BEAUTY	SBB&M	08N	06E	23	2400.8
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	561636	3847892	SLEEPING BEAUTY	SBB&M	08N	06E	23	2404.1
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	561417	3847899	SLEEPING BEAUTY	SBB&M	08N	06E	23	2388.9
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	559487	3847900	SLEEPING BEAUTY	SBB&M	08N	06E	21	2243.4
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	559703	3847927	SLEEPING BEAUTY	SBB&M	08N	06E	21	2260.5
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	561700	3847964	SLEEPING BEAUTY	SBB&M	08N	06E	23	2408.1
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	560651	3848002	SLEEPING BEAUTY	SBB&M	08N	06E	22	2332.7
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	560691	3848102	SLEEPING BEAUTY	SBB&M	08N	06E	22	2335.7
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	559235	3848245	SLEEPING BEAUTY	SBB&M	08N	06E	21	2224.4
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	560307	3848348	SLEEPING BEAUTY	SBB&M	08N	06E	22	2307.1
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	562392	3848435	SLEEPING BEAUTY	SBB&M	08N	06E	23	2477.8

YEAR	Scientific Name	Common Name	UTM Coordinates (11S WGS84)		USGS 7.5-Minute California Topographic Quadrangle Name	MERIDIAN	TOWNSHIP	RANGE	SECTION	ELEVATION (ft)
			X	Y						
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	558639	3848503	SLEEPING BEAUTY	SBB&M	08N	06E	21	2191.6
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	558688	3848529	SLEEPING BEAUTY	SBB&M	08N	06E	21	2194.9
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	558871	3848594	SLEEPING BEAUTY	SBB&M	08N	06E	21	2204.7
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	561628	3848746	SLEEPING BEAUTY	SBB&M	08N	06E	14	2425.3
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	558965	3848826	SLEEPING BEAUTY	SBB&M	08N	06E	16	2212.1
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	561259	3848888	SLEEPING BEAUTY	SBB&M	08N	06E	15	2396.4
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	561426	3848892	SLEEPING BEAUTY	SBB&M	08N	06E	14	2403.3
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	561164	3848907	SLEEPING BEAUTY	SBB&M	08N	06E	15	2387.8
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	559068	3848938	SLEEPING BEAUTY	SBB&M	08N	06E	16	2216.8
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	556743	3849012	HECTOR	SBB&M	08N	06E	17	2103.0
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	556748	3849024	HECTOR	SBB&M	08N	06E	17	2103.0
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	556588	3849040	HECTOR	SBB&M	08N	06E	17	2091.8
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	556585	3849042	HECTOR	SBB&M	08N	06E	17	2091.4
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	556582	3849045	HECTOR	SBB&M	08N	06E	17	2091.0
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	556579	3849046	HECTOR	SBB&M	08N	06E	17	2090.6
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	556578	3849047	HECTOR	SBB&M	08N	06E	17	2090.4
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	556575	3849049	HECTOR	SBB&M	08N	06E	17	2090.0



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			X	Y						
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	557525	3849115	SLEEPING BEAUTY	SBB&M	08N	06E	17	2135.8
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	556465	3849128	HECTOR	SBB&M	08N	06E	18	2083.2
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	556554	3849160	HECTOR	SBB&M	08N	06E	17	2086.6
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	556553	3849167	HECTOR	SBB&M	08N	06E	17	2086.6
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	556652	3849279	HECTOR	SBB&M	08N	06E	17	2085.1
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	559003	3849504	SLEEPING BEAUTY	SBB&M	08N	06E	16	2220.8
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	558788	3849519	SLEEPING BEAUTY	SBB&M	08N	06E	16	2208.0
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	557730	3849595	SLEEPING BEAUTY	SBB&M	08N	06E	17	2151.9
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	554701	3849628	HECTOR	SBB&M	08N	05E	13	2024.6
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	556662	3849668	HECTOR	SBB&M	08N	06E	17	2085.0
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	557054	3849677	HECTOR	SBB&M	08N	06E	17	2111.9
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	556728	3849685	HECTOR	SBB&M	08N	06E	17	2092.0
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	555574	3849839	HECTOR	SBB&M	08N	06E	18	2045.1
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	559115	3849891	SLEEPING BEAUTY	SBB&M	08N	06E	16	2236.4
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	559118	3849894	SLEEPING BEAUTY	SBB&M	08N	06E	16	2237.0
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	553036	3849926	HECTOR	SBB&M	08N	05E	14	2003.2
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	555792	3849954	HECTOR	SBB&M	08N	06E	18	2057.1

YEAR	Scientific Name	Common Name	UTM Coordinates (11S WGS84)		USGS 7.5-Minute California Topographic Quadrangle Name	MERIDIAN	TOWNSHIP	RANGE	SECTION	ELEVATION (ft)
			X	Y						
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	559889	3850099	SLEEPING BEAUTY	SBB&M	08N	06E	15	2313.0
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	554247	3850148	HECTOR	SBB&M	08N	05E	12	2052.2
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	557026	3850185	HECTOR	SBB&M	08N	06E	8	2121.1
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	557051	3850205	HECTOR	SBB&M	08N	06E	8	2123.6
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	557014	3850209	HECTOR	SBB&M	08N	06E	8	2119.4
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	557054	3850223	HECTOR	SBB&M	08N	06E	8	2125.0
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	555159	3850231	HECTOR	SBB&M	08N	06E	7	2030.7
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	556981	3850288	HECTOR	SBB&M	08N	06E	8	2119.4
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	559399	3850294	SLEEPING BEAUTY	SBB&M	08N	06E	9	2286.7
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	555150	3850303	HECTOR	SBB&M	08N	06E	7	2030.8
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	547984	3850323	HECTOR	SBB&M	08N	05E	8	1840.5
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	559286	3850327	SLEEPING BEAUTY	SBB&M	08N	06E	9	2272.5
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	554760	3850351	HECTOR	SBB&M	08N	05E	12	2017.7
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	556300	3850435	HECTOR	SBB&M	08N	06E	7	2080.6
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	551364	3850465	HECTOR	SBB&M	08N	05E	10	1929.1
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	557835	3850466	SLEEPING BEAUTY	SBB&M	08N	06E	8	2184.5
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	547124	3850474	HECTOR	SBB&M	08N	05E	8	1807.7

YEAR	Scientific Name	Common Name	UTM Coordinates (11S WGS84)		USGS 7.5-Minute California Topographic Quadrangle Name	MERIDIAN	TOWNSHIP	RANGE	SECTION	ELEVATION (ft)
			X	Y						
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	547122	3850476	HECTOR	SBB&M	08N	05E	8	1807.7
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	558062	3850487	SLEEPING BEAUTY	SBB&M	08N	06E	8	2197.3
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	556596	3850584	HECTOR	SBB&M	08N	06E	8	2096.5
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	556147	3850657	HECTOR	SBB&M	08N	06E	7	2073.5
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	552757	3850662	HECTOR	SBB&M	08N	05E	11	1993.5
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	556217	3850664	HECTOR	SBB&M	08N	06E	7	2078.6
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	560110	3850867	SLEEPING BEAUTY	SBB&M	08N	06E	10	2361.2
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	560113	3850870	SLEEPING BEAUTY	SBB&M	08N	06E	10	2361.7
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	551940	3850910	HECTOR	SBB&M	08N	05E	11	1935.2
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	554851	3850916	HECTOR	SBB&M	08N	05E	12	2024.3
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	554628	3850991	HECTOR	SBB&M	08N	05E	12	2017.5
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	554494	3851047	HECTOR	SBB&M	08N	05E	12	2014.4
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	552763	3851138	HECTOR	SBB&M	08N	05E	11	1948.8
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	553061	3851143	HECTOR	SBB&M	08N	05E	11	1958.7
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	553869	3851231	HECTOR	SBB&M	08N	05E	12	1994.7
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	553829	3851243	HECTOR	SBB&M	08N	05E	12	1994.7
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	553842	3851244	HECTOR	SBB&M	08N	05E	12	1994.7

YEAR	Scientific Name	Common Name	UTM Coordinates (11S WGS84)		USGS 7.5-Minute California Topographic Quadrangle Name	MERIDIAN	TOWNSHIP	RANGE	SECTION	ELEVATION (ft)
			X	Y						
2008	<i>Androstaphyllum breviflor</i>	small-flowered androstephium	554756	3851305	HECTOR	SBB&M	08N	05E	12	2034.0
2008	<i>Androstaphyllum breviflor</i>	small-flowered androstephium	551816	3851316	HECTOR	SBB&M	08N	05E	11	1920.0
2008	<i>Androstaphyllum breviflor</i>	small-flowered androstephium	553262	3851349	HECTOR	SBB&M	08N	05E	11	1978.3
2008	<i>Androstaphyllum breviflor</i>	small-flowered androstephium	553291	3851351	HECTOR	SBB&M	08N	05E	11	1979.0
2008	<i>Androstaphyllum breviflor</i>	small-flowered androstephium	553122	3851387	HECTOR	SBB&M	08N	05E	11	1973.3
2008	<i>Androstaphyllum breviflor</i>	small-flowered androstephium	552712	3851711	HECTOR	SBB&M	08N	05E	11	1971.8
2008	<i>Androstaphyllum breviflor</i>	small-flowered androstephium	552297	3851760	HECTOR	SBB&M	08N	05E	2	1961.9
2008	<i>Androstaphyllum breviflor</i>	small-flowered androstephium	553041	3851961	HECTOR	SBB&M	08N	05E	2	2006.9
2008	<i>Androstaphyllum breviflor</i>	small-flowered androstephium	552835	3852155	HECTOR	SBB&M	08N	05E	2	2013.3
2008	<i>Androstaphyllum breviflor</i>	small-flowered androstephium	553893	3852219	HECTOR	SBB&M	08N	05E	1	2055.2
2008	<i>Androstaphyllum breviflor</i>	small-flowered androstephium	553518	3852337	HECTOR	SBB&M	08N	05E	1	2058.8
2008	<i>Androstaphyllum breviflor</i>	small-flowered androstephium	552910	3852366	HECTOR	SBB&M	08N	05E	2	2034.1
2008	<i>Androstaphyllum breviflor</i>	small-flowered androstephium	554188	3852515	HECTOR	SBB&M	08N	05E	1	2083.3
2008	<i>Androstaphyllum breviflor</i>	small-flowered androstephium	554048	3852768	HECTOR	SBB&M	08N	05E	1	2109.3
2008	<i>Androstaphyllum breviflor</i>	small-flowered androstephium	554099	3852811	HECTOR	SBB&M	08N	05E	1	2112.8
2008	<i>Androstaphyllum breviflor</i>	small-flowered androstephium	554047	3852814	HECTOR	SBB&M	08N	05E	1	2112.9
2008	<i>Androstaphyllum breviflor</i>	small-flowered androstephium	553543	3853127	HECTOR	SBB&M	08N	05E	1	2137.9

YEAR	Scientific Name	Common Name	UTM Coordinates (11S WGS84)		USGS 7.5-Minute California Topographic Quadrangle Name	MERIDIAN	TOWNSHIP	RANGE	SECTION	ELEVATION (ft)
			X	Y						
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	554067	3853291	HECTOR	SBB&M	08N	05E	1	2157.9
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	554333	3853304	HECTOR	SBB&M	08N	05E	1	2169.6
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	552850	3853425	HECTOR	SBB&M	09N	05E	35	2140.8
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	552653	3853445	HECTOR	SBB&M	09N	05E	35	2133.8
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	556022	3853500	HECTOR	SBB&M	09N	06E	31	2334.3
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	552544	3854056	HECTOR	SBB&M	09N	05E	35	2181.6
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	548642	3854527	HECTOR	SBB&M	09N	05E	33	1945.5
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	547592	3854582	HECTOR	SBB&M	09N	05E	32	1889.8
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	546670	3854709	HECTOR	SBB&M	09N	05E	31	1875.7
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	548758	3854830	HECTOR	SBB&M	09N	05E	33	1966.7
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	548699	3855134	HECTOR	SBB&M	09N	05E	28	1968.5
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	546326	3855337	HECTOR	SBB&M	09N	05E	30	1922.7
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	545729	3855377	HECTOR	SBB&M	09N	05E	30	2051.4
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	549366	3855440	HECTOR	SBB&M	09N	05E	28	2034.1
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	546213	3855452	HECTOR	SBB&M	09N	05E	30	1939.0
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	546139	3855470	HECTOR	SBB&M	09N	05E	30	1945.5
2008	<i>Androstaphium breviflor</i>	small-flowered androstephium	545938	3855496	HECTOR	SBB&M	09N	05E	30	1967.5

YEAR	Scientific Name	Common Name	UTM Coordinates (11S WGS84)		USGS 7.5-Minute California Topographic Quadrangle Name	MERIDIAN	TOWNSHIP	RANGE	SECTION	ELEVATION (ft)
			X	Y						
2008	<i>Androstephium breviflor</i>	small-flowered androstephium	547010	3855509	HECTOR	SBB&M	09N	05E	29	1894.8
2008	<i>Androstephium breviflor</i>	small-flowered androstephium	545654	3855549	TROY LAKE	SBB&M	09N	05E	30	2047.9
2008	<i>Androstephium breviflor</i>	small-flowered androstephium	546463	3855613	HECTOR	SBB&M	09N	05E	30	1924.7
2008	<i>Androstephium breviflor</i>	small-flowered androstephium	546804	3855894	HECTOR	SBB&M	09N	05E	30	1909.4
2008	<i>Androstephium breviflor</i>	small-flowered androstephium	547056	3855966	HECTOR	SBB&M	09N	05E	29	1916.0
2008	<i>Androstephium breviflor</i>	small-flowered androstephium	545650	3855990	TROY LAKE	SBB&M	09N	05E	30	2010.9
2008	<i>Androstephium breviflor</i>	small-flowered androstephium	546393	3856205	HECTOR	SBB&M	09N	05E	30	1931.4
2008	<i>Androstephium breviflor</i>	small-flowered androstephium	546449	3856318	HECTOR	SBB&M	09N	05E	30	1924.5
2008	<i>Androstephium breviflor</i>	small-flowered androstephium	545399	3856498	TROY LAKE	SBB&M	09N	05E	30	2074.9
2008	<i>Androstephium breviflor</i>	small-flowered androstephium	545558	3856565	TROY LAKE	SBB&M	09N	05E	19	2061.4
2008	<i>Androstephium breviflor</i>	small-flowered androstephium	545471	3856569	TROY LAKE	SBB&M	09N	05E	19	2069.7
2008	<i>Androstephium breviflor</i>	small-flowered androstephium	545909	3857286	HECTOR	SBB&M	09N	05E	19	1987.9
2008	<i>Androstephium breviflor</i>	small-flowered androstephium	545688	3858050	TROY LAKE	SBB&M	09N	05E	19	2022.9
2008	<i>Cynanchum utahense</i>	Utah vine milkweed	555764	3848786	HECTOR	SBB&M	08N	06E	18	2073.5
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	561434	3846052	SLEEPING BEAUTY	SBB&M	08N	06E	26	2302.7
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	560003	3846580	SLEEPING BEAUTY	SBB&M	08N	06E	27	2211.5
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	559992	3846596	SLEEPING BEAUTY	SBB&M	08N	06E	27	2210.5



YEAR	Scientific Name	Common Name	UTM Coordinates (11S WGS84)		USGS 7.5-Minute California Topographic Quadrangle Name	MERIDIAN	TOWNSHIP	RANGE	SECTION	ELEVATION (ft)
			X	Y						
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	559942	3846845	SLEEPING BEAUTY	SBB&M	08N	06E	27	2226.5
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	561701	3846920	SLEEPING BEAUTY	SBB&M	08N	06E	26	2433.7
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	560031	3847136	SLEEPING BEAUTY	SBB&M	08N	06E	22	2243.8
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	560027	3847137	SLEEPING BEAUTY	SBB&M	08N	06E	22	2244.0
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	560035	3847138	SLEEPING BEAUTY	SBB&M	08N	06E	22	2244.1
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	560025	3847142	SLEEPING BEAUTY	SBB&M	08N	06E	22	2244.7
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	560032	3847146	SLEEPING BEAUTY	SBB&M	08N	06E	22	2245.2
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	560033	3847148	SLEEPING BEAUTY	SBB&M	08N	06E	22	2245.5
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	560038	3847149	SLEEPING BEAUTY	SBB&M	08N	06E	22	2245.7
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	560050	3847151	SLEEPING BEAUTY	SBB&M	08N	06E	22	2246.3
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	555951	3847433	HECTOR	SBB&M	08N	06E	19	2116.1
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	555946	3847436	HECTOR	SBB&M	08N	06E	19	2116.1
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	560518	3847715	SLEEPING BEAUTY	SBB&M	08N	06E	22	2307.4
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	560685	3847760	SLEEPING BEAUTY	SBB&M	08N	06E	22	2321.3
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	560657	3847764	SLEEPING BEAUTY	SBB&M	08N	06E	22	2317.3
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	560658	3847764	SLEEPING BEAUTY	SBB&M	08N	06E	22	2317.4
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	560550	3847800	SLEEPING BEAUTY	SBB&M	08N	06E	22	2313.0

YEAR	Scientific Name	Common Name	UTM Coordinates (11S WGS84)		USGS 7.5-Minute California Topographic Quadrangle Name	MERIDIAN	TOWNSHIP	RANGE	SECTION	ELEVATION (ft)
			X	Y						
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	561321	3847843	SLEEPING BEAUTY	SBB&M	08N	06E	22	2382.3
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	561323	3847844	SLEEPING BEAUTY	SBB&M	08N	06E	22	2382.7
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	561322	3847844	SLEEPING BEAUTY	SBB&M	08N	06E	22	2382.2
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	561621	3847891	SLEEPING BEAUTY	SBB&M	08N	06E	23	2403.0
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	561621	3847897	SLEEPING BEAUTY	SBB&M	08N	06E	23	2402.2
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	561603	3847923	SLEEPING BEAUTY	SBB&M	08N	06E	23	2401.6
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	561604	3847931	SLEEPING BEAUTY	SBB&M	08N	06E	23	2401.6
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	561604	3847935	SLEEPING BEAUTY	SBB&M	08N	06E	23	2401.6
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	560761	3847965	SLEEPING BEAUTY	SBB&M	08N	06E	22	2341.0
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	560763	3847967	SLEEPING BEAUTY	SBB&M	08N	06E	22	2341.5
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	561553	3847972	SLEEPING BEAUTY	SBB&M	08N	06E	23	2398.3
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	561533	3847972	SLEEPING BEAUTY	SBB&M	08N	06E	23	2398.2
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	561552	3847972	SLEEPING BEAUTY	SBB&M	08N	06E	23	2398.3
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	561578	3847987	SLEEPING BEAUTY	SBB&M	08N	06E	23	2398.4
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	561629	3847999	SLEEPING BEAUTY	SBB&M	08N	06E	23	2402.5
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	561628	3847999	SLEEPING BEAUTY	SBB&M	08N	06E	23	2402.4
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	561618	3848006	SLEEPING BEAUTY	SBB&M	08N	06E	23	2401.0

YEAR	Scientific Name	Common Name	UTM Coordinates (11S WGS84)		USGS 7.5-Minute California Topographic Quadrangle Name	MERIDIAN	TOWNSHIP	RANGE	SECTION	ELEVATION (ft)
			X	Y						
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	561620	3848007	SLEEPING BEAUTY	SBB&M	08N	06E	23	2401.2
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	561620	3848012	SLEEPING BEAUTY	SBB&M	08N	06E	23	2401.2
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	560669	3848027	SLEEPING BEAUTY	SBB&M	08N	06E	22	2332.7
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	561243	3848047	SLEEPING BEAUTY	SBB&M	08N	06E	22	2371.7
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	561859	3848195	SLEEPING BEAUTY	SBB&M	08N	06E	23	2434.4
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	561952	3848241	SLEEPING BEAUTY	SBB&M	08N	06E	23	2438.8
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	559862	3848580	SLEEPING BEAUTY	SBB&M	08N	06E	22	2276.9
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	559767	3848613	SLEEPING BEAUTY	SBB&M	08N	06E	22	2267.1
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	561457	3848877	SLEEPING BEAUTY	SBB&M	08N	06E	14	2407.4
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	561457	3848879	SLEEPING BEAUTY	SBB&M	08N	06E	14	2407.1
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	561455	3848880	SLEEPING BEAUTY	SBB&M	08N	06E	14	2406.8
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	561457	3848880	SLEEPING BEAUTY	SBB&M	08N	06E	14	2407.0
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	558930	3848929	SLEEPING BEAUTY	SBB&M	08N	06E	16	2207.1
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	563100	3849203	SLEEPING BEAUTY	SBB&M	08N	06E	13	2612.5
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	554933	3849444	HECTOR	SBB&M	08N	06E	18	2034.1
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	554931	3849444	HECTOR	SBB&M	08N	06E	18	2034.1
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	554936	3849445	HECTOR	SBB&M	08N	06E	18	2034.1

YEAR	Scientific Name	Common Name	UTM Coordinates (11S WGS84)		USGS 7.5-Minute California Topographic Quadrangle Name	MERIDIAN	TOWNSHIP	RANGE	SECTION	ELEVATION (ft)
			X	Y						
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	554932	3849446	HECTOR	SBB&M	08N	06E	18	2034.1
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	554935	3849446	HECTOR	SBB&M	08N	06E	18	2034.1
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	554936	3849447	HECTOR	SBB&M	08N	06E	18	2034.1
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	554928	3849447	HECTOR	SBB&M	08N	06E	18	2034.1
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	554927	3849448	HECTOR	SBB&M	08N	06E	18	2034.1
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	554937	3849448	HECTOR	SBB&M	08N	06E	18	2034.1
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	554936	3849449	HECTOR	SBB&M	08N	06E	18	2034.1
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	554930	3849450	HECTOR	SBB&M	08N	06E	18	2034.1
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	554939	3849450	HECTOR	SBB&M	08N	06E	18	2034.1
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	562442	3850029	SLEEPING BEAUTY	SBB&M	08N	06E	14	2582.8
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	562446	3850029	SLEEPING BEAUTY	SBB&M	08N	06E	14	2585.1
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	561753	3850117	SLEEPING BEAUTY	SBB&M	08N	06E	14	2681.5
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	562431	3850123	SLEEPING BEAUTY	SBB&M	08N	06E	14	2614.6
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	561846	3850128	SLEEPING BEAUTY	SBB&M	08N	06E	14	2611.5
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	561842	3850131	SLEEPING BEAUTY	SBB&M	08N	06E	14	2611.5
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	559910	3850191	SLEEPING BEAUTY	SBB&M	08N	06E	15	2325.8
2008	<i>Penstemon albomarginatus</i>	white-margined beardtongue	556242	3851191	HECTOR	SBB&M	08N	06E	7	2106.4

YEAR	Scientific Name	Common Name	UTM Coordinates (11S WGS84)		USGS 7.5-Minute California Topographic Quadrangle Name	MERIDIAN	TOWNSHIP	RANGE	SECTION	ELEVATION (ft)
			X	Y						
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	554143	3852388	HECTOR	SBB&M	08N	05E	1	2072.6
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	554277	3852452	HECTOR	SBB&M	08N	05E	1	2079.7
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	554278	3852452	HECTOR	SBB&M	08N	05E	1	2079.8
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	554239	3852470	HECTOR	SBB&M	08N	05E	1	2078.0
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	554194	3852495	HECTOR	SBB&M	08N	05E	1	2081.2
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	545596	3852511	TROY LAKE	SBB&M	08N	05E	6	1856.3
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	554208	3852528	HECTOR	SBB&M	08N	05E	1	2083.3
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	554208	3852529	HECTOR	SBB&M	08N	05E	1	2083.3
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	554194	3852545	HECTOR	SBB&M	08N	05E	1	2085.0
2008	<i>Penstemon albomarginatu</i>	white-margined beardtongue	554187	3852611	HECTOR	SBB&M	08N	05E	1	2093.2

Mail to:  
California Natural Diversity Database  
Department of Fish and Game  
1807 13<sup>th</sup> Street, Suite 202  
Sacramento, CA 95811

Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

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Source Code \_\_\_\_\_ Quad Code \_\_\_\_\_  
Elm Code \_\_\_\_\_ Occ. No. \_\_\_\_\_  
EO Index No. \_\_\_\_\_ Map Index No. \_\_\_\_\_

Date of Field Work (mm/dd/yyyy): 05/01/2007

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: *Gopherus agassizii*

Common Name: Desert Tortoise

Species Found? ☒ Yes ☐ No If not, why? \_\_\_\_\_

Total No. Individuals 35 Subsequent Visit? ☐ yes ☒ no

Is this an existing NDDB occurrence? ☐ no ☒ unk.  
Yes, Occ. # \_\_\_\_\_

Collection? If yes: \_\_\_\_\_  
Number \_\_\_\_\_ Museum / Herbarium \_\_\_\_\_

Reporter: URS Corporation

Address: 1615 Murray Canyon Road, Suite 1000  
San Diego, CA 92108

E-mail Address: \_\_\_\_\_

Phone: (619) 294-9400

Plant Information

Phenology: \_\_\_\_\_% vegetative \_\_\_\_\_% flowering \_\_\_\_\_% fruiting

Animal Information

# adults # juveniles # larvae # egg masses # unknown  
☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

See Attached Table

County: San Bernardino County

Landowner / Mgr.: BLM

Quad Name: \_\_\_\_\_

Elevation: \_\_\_\_\_

T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_, \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4, Meridian: H ☐ M ☐ S ☐

Source of Coordinates (GPS, topo. map & type): GPS

T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_, \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4, Meridian: H ☐ M ☐ S ☐

GPS Make & Model Garmin Rhino 520

DATUM: NAD27 ☐ NAD83 ☐ WGS84 ☒

Horizontal Accuracy 3 meters \_\_\_\_\_ meters/feet

Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☒ OR Geographic (Latitude & Longitude) ☐

Coordinates: \_\_\_\_\_

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

The 8,230-acre AFC assessment area, including the 1000-foot buffer surrounding the project boundary, is located in gently sloping, open desert scrub with several sandy alluvial fans eroding down from the steep rocky hills to the northeast. Vegetation is comprised primarily of Mojave creosote bush scrub with a smaller area of desert saltbush scrub as defined by the Holland (1986) classification of plant communities.

Other rare taxa seen at THIS site on THIS date: Mojave fringe-toed lizard, small-flowered androstephium, white-margined beardtongue

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☒ Good ☐ Fair ☐ Poor

Immediate AND surrounding land use: Dirt roads and trails, railroads, interstate highway, underground pipelines, past mining

Visible disturbances: Disturbed areas are associated with the aforementioned land uses

Threats: Anthropogenic activity

Comments: \_\_\_\_\_

Determination: (check one or more, and fill in blanks)

- ☐ Keyed (cite reference): \_\_\_\_\_  
☐ Compared with specimen housed at: \_\_\_\_\_  
☒ Compared with photo / drawing in: Field Guide to Amphibians and Reptiles (Lemm 06)  
☐ By another person (name): \_\_\_\_\_  
☐ Other: \_\_\_\_\_

Photographs: (check one or more)

	Slide	Print	Digital
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes ☒ no ☐



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Elm Code \_\_\_\_\_ Occ. No. \_\_\_\_\_  
EO Index No. \_\_\_\_\_ Map Index No. \_\_\_\_\_

Date of Field Work (mm/dd/yyyy): 05/01/2008

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: *Gopherus agassizii*

Common Name: Desert Tortoise

Species Found? ☒ Yes ☐ No If not, why? \_\_\_\_\_  
Total No. Individuals 26 Subsequent Visit? ☐ yes ☒ no  
Is this an existing NDDDB occurrence? ☐ no ☒ unk.  
Yes, Occ. # \_\_\_\_\_  
Collection? If yes: \_\_\_\_\_  
Number \_\_\_\_\_ Museum / Herbarium \_\_\_\_\_

Reporter: URS Corporation  
Address: 1615 Murray Canyon Road, Suite 1000  
San Diego, CA 92108  
E-mail Address: \_\_\_\_\_  
Phone: (619) 294-9400

Plant Information

Phenology: \_\_\_\_\_% vegetative \_\_\_\_\_% flowering \_\_\_\_\_% fruiting

Animal Information

# adults # juveniles # larvae # egg masses # unknown  
☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

See Attached Table

County: San Bernardino County Landowner / Mgr.: BLM  
Quad Name: \_\_\_\_\_ Elevation: \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_, \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4, Meridian: H ☐ M ☐ S ☐ Source of Coordinates (GPS, topo. map & type): GPS  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_, \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4, Meridian: H ☐ M ☐ S ☐ GPS Make & Model Garmin Rhino 520  
DATUM: NAD27 ☐ NAD83 ☐ WGS84 ☒ Horizontal Accuracy 3 meters \_\_\_\_\_ meters/feet  
Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☒ OR Geographic (Latitude & Longitude) ☐  
Coordinates: \_\_\_\_\_

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

The 8,230-acre AFC assessment area, including the 1000-foot buffer surrounding the project boundary, is located in gently sloping, open desert scrub with several sandy alluvial fans eroding down from the steep rocky hills to the northeast. Vegetation is comprised primarily of Mojave creosote bush scrub with a smaller area of desert saltbush scrub as defined by the Holland (1986) classification of plant communities.

Other rare taxa seen at THIS site on THIS date: Mojave fringe-toed lizard, small-flowered androstephium, white-margined beardtongue

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☒ Good ☐ Fair ☐ Poor

Immediate AND surrounding land use: Dirt roads and trails, railroads, interstate highway, underground pipelines, past mining

Visible disturbances: Disturbed areas are associated with the aforementioned land uses

Threats: Anthropogenic activity

Comments:

Determination: (check one or more, and fill in blanks)

- ☐ Keyed (cite reference): \_\_\_\_\_  
☐ Compared with specimen housed at: \_\_\_\_\_  
☒ Compared with photo / drawing in: Field Guide to Amphibians and Reptiles (Lemm 06)  
☐ By another person (name): \_\_\_\_\_  
☐ Other: \_\_\_\_\_

Photographs: (check one or more)

Plant / animal ☐ Slide ☐ Print ☒ Digital  
Habitat ☐ ☐ ☐ ☒  
Diagnostic feature ☐ ☐ ☐ ☐

May we obtain duplicates at our expense? yes ☒ no ☐

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Sacramento, CA 95811

Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

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Source Code \_\_\_\_\_ Quad Code \_\_\_\_\_  
Elm Code \_\_\_\_\_ Occ. No. \_\_\_\_\_  
EO Index No. \_\_\_\_\_ Map Index No. \_\_\_\_\_

Date of Field Work (mm/dd/yyyy): 05/01/2008

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: *Androstephium breviflor*

Common Name: Small-flowered Androstephium

Species Found? ☒ Yes ☐ No If not, why? \_\_\_\_\_

Total No. Individuals 157 Subsequent Visit? ☐ yes ☒ no

Is this an existing NDDB occurrence? ☐ no ☒ unk.  
Yes, Occ. # \_\_\_\_\_

Collection? If yes: \_\_\_\_\_  
Number \_\_\_\_\_ Museum / Herbarium \_\_\_\_\_

Reporter: URS Corporation

Address: 1615 Murray Canyon Road, Suite 1000  
San Diego, CA 92108

E-mail Address: \_\_\_\_\_

Phone: (619) 294-9400

Plant Information

Phenology: \_\_\_\_\_% vegetative \_\_\_\_\_% flowering \_\_\_\_\_% fruiting

Animal Information

# adults # juveniles # larvae # egg masses # unknown  
☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

See Attached Table

County: San Bernardino County

Landowner / Mgr.: BLM

Quad Name: \_\_\_\_\_ Elevation: \_\_\_\_\_

T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_, \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4, Meridian: H ☐ M ☐ S ☐

Source of Coordinates (GPS, topo. map & type): GPS

T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_, \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4, Meridian: H ☐ M ☐ S ☐

GPS Make & Model Garmin Rhino 520

DATUM: NAD27 ☐ NAD83 ☐ WGS84 ☒

Horizontal Accuracy 3 meters \_\_\_\_\_ meters/feet

Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☒ OR Geographic (Latitude & Longitude) ☐

Coordinates: \_\_\_\_\_

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

The 8,230-acre AFC assessment area, including the 1000-foot buffer surrounding the project boundary, is located in gently sloping, open desert scrub with several sandy alluvial fans eroding down from the steep rocky hills to the northeast. Vegetation is comprised primarily of Mojave creosote bush scrub with a smaller area of desert saltbush scrub as defined by the Holland (1986) classification of plant communities.

Other rare taxa seen at THIS site on THIS date: Desert Tortoise, Mojave fringe-toed lizard, white-margined beardtongue (separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☒ Good ☐ Fair ☐ Poor

Immediate AND surrounding land use: Dirt roads and trails, railroads, interstate highway, underground pipelines, past mining

Visible disturbances: Disturbed areas are associated with the aforementioned land uses

Threats: Anthropogenic activity

Comments: \_\_\_\_\_

Determination: (check one or more, and fill in blanks)

- ☒ Keyed (cite reference): The Jepson Desert Manual (Baldwin et al. 2002)  
☐ Compared with specimen housed at: \_\_\_\_\_  
☐ Compared with photo / drawing in: \_\_\_\_\_  
☐ By another person (name): \_\_\_\_\_  
☐ Other: \_\_\_\_\_

Photographs: (check one or more)

	Slide	Print	Digital
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes ☒ no ☐

Mail to:  
California Natural Diversity Database  
Department of Fish and Game  
1807 13<sup>th</sup> Street, Suite 202  
Sacramento, CA 95811

Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

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Elm Code \_\_\_\_\_ Occ. No. \_\_\_\_\_  
EO Index No. \_\_\_\_\_ Map Index No. \_\_\_\_\_

Date of Field Work (mm/dd/yyyy): 05/01/2008

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California Native Species Field Survey Form

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Scientific Name: *Cynanchum utahense*

Common Name: Utah Vine Milkweed

Species Found? ☒ Yes ☐ No If not, why? \_\_\_\_\_

Total No. Individuals 1 Subsequent Visit? ☐ yes ☒ no

Is this an existing NDDB occurrence? ☐ no ☒ unk.  
Yes, Occ. # \_\_\_\_\_

Collection? If yes: \_\_\_\_\_  
Number \_\_\_\_\_ Museum / Herbarium \_\_\_\_\_

Reporter: URS Corporation

Address: 1615 Murray Canyon Road, Suite 1000  
San Diego, CA 92108

E-mail Address: \_\_\_\_\_

Phone: (619) 294-9400

Plant Information

Phenology: \_\_\_\_\_% vegetative \_\_\_\_\_% flowering \_\_\_\_\_% fruiting

Animal Information

# adults # juveniles # larvae # egg masses # unknown  
☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

See Attached Table

County: San Bernardino County

Landowner / Mgr.: BLM

Quad Name: \_\_\_\_\_ Elevation: \_\_\_\_\_

T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_, \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4, Meridian: H ☐ M ☐ S ☐

Source of Coordinates (GPS, topo. map & type): GPS

T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_, \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4, Meridian: H ☐ M ☐ S ☐

GPS Make & Model Garmin Rhino 520

DATUM: NAD27 ☐ NAD83 ☐ WGS84 ☒

Horizontal Accuracy 3 meters \_\_\_\_\_ meters/feet

Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☒ OR Geographic (Latitude & Longitude) ☐

Coordinates: \_\_\_\_\_

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

The 8,230-acre AFC assessment area, including the 1000-foot buffer surrounding the project boundary, is located in gently sloping, open desert scrub with several sandy alluvial fans eroding down from the steep rocky hills to the northeast. Vegetation is comprised primarily of Mojave creosote bush scrub with a smaller area of desert saltbush scrub as defined by the Holland (1986) classification of plant communities.

Other rare taxa seen at THIS site on THIS date: Desert Tortoise, Mojave fringe-toed lizard, white-margined beardtongue, (separate form preferred) small-flowered androstaphylos

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☒ Good ☐ Fair ☐ Poor

Immediate AND surrounding land use: Dirt roads and trails, railroads, interstate highway, underground pipelines, past mining

Visible disturbances: Disturbed areas are associated with the aforementioned land uses

Threats: Anthropogenic activity

Comments: \_\_\_\_\_

Determination: (check one or more, and fill in blanks)

- ☒ Keyed (cite reference): The Jepson Desert Manual (Baldwin et al. 2002)  
☐ Compared with specimen housed at: \_\_\_\_\_  
☐ Compared with photo / drawing in: \_\_\_\_\_  
☐ By another person (name): \_\_\_\_\_  
☐ Other: \_\_\_\_\_

Photographs: (check one or more)

Plant / animal ☐ Slide ☐ Print ☐ Digital ☐  
Habitat ☐ ☐ ☐ ☒  
Diagnostic feature ☐ ☐ ☐ ☐

May we obtain duplicates at our expense? yes ☒ no ☐

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Department of Fish and Game  
1807 13<sup>th</sup> Street, Suite 202  
Sacramento, CA 95811

Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

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EO Index No. \_\_\_\_\_ Map Index No. \_\_\_\_\_

Date of Field Work (mm/dd/yyyy): 05/01/2008

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**California Native Species Field Survey Form**

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Scientific Name: *Penstemon albomarginatu*

Common Name: White-margined Beardtongue

Species Found? ☒ Yes ☐ No If not, why? \_\_\_\_\_

Total No. Individuals 81 Subsequent Visit? ☐ yes ☒ no

Is this an existing NDBB occurrence? ☐ no ☒ unk.  
Yes, Occ. # \_\_\_\_\_

Collection? If yes: \_\_\_\_\_  
Number Museum / Herbarium

Reporter: URS Corporation

Address: 1615 Murray Canyon Road, Suite 1000  
San Diego, CA 92108

E-mail Address: \_\_\_\_\_

Phone: (619) 294-9400

**Plant Information**

Phenology: \_\_\_\_\_% vegetative \_\_\_\_\_% flowering \_\_\_\_\_% fruiting

**Animal Information**

# adults # juveniles # larvae # egg masses # unknown  
☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

**Location Description (please attach map AND/OR fill out your choice of coordinates, below)**

See Attached Table

County: San Bernardino County

Landowner / Mgr.: BLM

Quad Name: \_\_\_\_\_

Elevation: \_\_\_\_\_

T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4, Meridian: H ☐ M ☐ S ☐

Source of Coordinates (GPS, topo. map & type): GPS

T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4, Meridian: H ☐ M ☐ S ☐

GPS Make & Model Garmin Rhino 520

DATUM: NAD27 ☐ NAD83 ☐ WGS84 ☒

Horizontal Accuracy 3 meters \_\_\_\_\_ meters/feet

Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☒ OR Geographic (Latitude & Longitude) ☐

Coordinates: \_\_\_\_\_

**Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):**

The 8,230-acre AFC assessment area, including the 1000-foot buffer surrounding the project boundary, is located in gently sloping, open desert scrub with several sandy alluvial fans eroding down from the steep rocky hills to the northeast. Vegetation is comprised primarily of Mojave creosote bush scrub with a smaller area of desert saltbush scrub as defined by the Holland (1986) classification of plant communities.

Other rare taxa seen at THIS site on THIS date: Desert Tortoise, Mojave fringe-toed lizard, small-flowered androstephium (separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☒ Good ☐ Fair ☐ Poor

Immediate AND surrounding land use: Dirt roads and trails, railroads, interstate highway, underground pipelines, past mining

Visible disturbances: Disturbed areas are associated with the aforementioned land uses

Threats: Anthropogenic activity

Comments: \_\_\_\_\_

**Determination: (check one or more, and fill in blanks)**

- ☒ Keyed (cite reference): The Jepson Desert Manual (Baldwin et al. 2002)  
☐ Compared with specimen housed at: \_\_\_\_\_  
☐ Compared with photo / drawing in: \_\_\_\_\_  
☐ By another person (name): \_\_\_\_\_  
☐ Other: \_\_\_\_\_

**Photographs: (check one or more)**

Plant / animal ☐ Slide ☐ Print ☐ Digital ☐  
Habitat ☐ ☐ ☐ ☒  
Diagnostic feature ☐ ☐ ☐ ☐

May we obtain duplicates at our expense? yes ☒ no ☐

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Date of Field Work (mm/dd/yyyy): 05/01/2008

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**California Native Species Field Survey Form**

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Scientific Name: *Uma scoparia*

Common Name: Mojave Fringe-toed Lizard

Species Found? ☒ Yes ☐ No If not, why? \_\_\_\_\_  
Total No. Individuals 24 Subsequent Visit? ☐ yes ☒ no  
Is this an existing NDDDB occurrence? ☐ no ☒ unk.  
Yes, Occ. # \_\_\_\_\_  
Collection? If yes: \_\_\_\_\_  
Number \_\_\_\_\_ Museum / Herbarium \_\_\_\_\_

Reporter: URS Corporation  
Address: 1615 Murray Canyon Road, Suite 1000  
San Diego, CA 92108  
E-mail Address: \_\_\_\_\_  
Phone: (619) 294-9400

**Plant Information**

Phenology: \_\_\_\_\_% vegetative \_\_\_\_\_% flowering \_\_\_\_\_% fruiting

**Animal Information**

# adults # juveniles # larvae # egg masses # unknown  
☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

**Location Description (please attach map AND/OR fill out your choice of coordinates, below)**

See Attached Table

County: San Bernardino County Landowner / Mgr.: BLM  
Quad Name: \_\_\_\_\_ Elevation: \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_, \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4, Meridian: H ☐ M ☐ S ☐ Source of Coordinates (GPS, topo. map & type): GPS  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_, \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4, Meridian: H ☐ M ☐ S ☐ GPS Make & Model Garmin Rhino 520  
**DATUM:** NAD27 ☐ NAD83 ☐ WGS84 ☒ Horizontal Accuracy 3 meters \_\_\_\_\_ meters/feet  
**Coordinate System:** UTM Zone 10 ☐ UTM Zone 11 ☒ OR Geographic (Latitude & Longitude) ☐  
**Coordinates:** \_\_\_\_\_

**Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):**

The 8,230-acre AFC assessment area, including the 1000-foot buffer surrounding the project boundary, is located in gently sloping, open desert scrub with several sandy alluvial fans eroding down from the steep rocky hills to the northeast. Vegetation is comprised primarily of Mojave creosote bush scrub with a smaller area of desert saltbush scrub as defined by the Holland (1986) classification of plant communities.

Other rare taxa seen at THIS site on THIS date: Desert Tortoise, small-flowered androstephium, white-margined beardtongue (separate form preferred)

**Site Information** Overall site/occurrence quality/viability (site + population): ☐ Excellent ☒ Good ☐ Fair ☐ Poor

Immediate AND surrounding land use: Dirt roads and trails, railroads, interstate highway, underground pipelines, past mining

Visible disturbances: Disturbed areas are associated with the aforementioned land uses

Threats: Anthropogenic activity

Comments: \_\_\_\_\_

**Determination: (check one or more, and fill in blanks)**

- ☐ Keyed (cite reference): \_\_\_\_\_  
☐ Compared with specimen housed at: \_\_\_\_\_  
☒ Compared with photo / drawing in: Western Reptiles and Amphibians (Stebbins 2003)  
☐ By another person (name): \_\_\_\_\_  
☐ Other: \_\_\_\_\_

**Photographs: (check one or more)** Slide Print Digital  
Plant / animal ☐ ☐ ☐  
Habitat ☐ ☐ ☒  
Diagnostic feature ☐ ☐ ☐

May we obtain duplicates at our expense? yes ☒ no ☐

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EO Index No. \_\_\_\_\_ Map Index No. \_\_\_\_\_

Date of Field Work (mm/dd/yyyy): 05/01/2008

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California Native Species Field Survey Form

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Scientific Name: *Taxidea taxus*

Common Name: American Badger

Species Found? ☒ Yes ☐ No If not, why?

Total No. Individuals 1 Subsequent Visit? ☐ yes ☒ no

Is this an existing NDDDB occurrence? ☐ no ☒ unk.  
Yes, Occ. # \_\_\_\_\_

Collection? If yes: \_\_\_\_\_  
Number Museum / Herbarium

Reporter: URS Corporation

Address: 1615 Murray Canyon Road, Suite 1000  
San Diego, CA 92108

E-mail Address: \_\_\_\_\_

Phone: (619) 294-9400

Plant Information

Phenology: \_\_\_\_\_% vegetative \_\_\_\_\_% flowering \_\_\_\_\_% fruiting

Animal Information

1 0  
# adults # juveniles # larvae # egg masses # unknown  
☐ breeding ☐ wintering ☒ burrow site ☐ rookery ☐ nesting ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

See Attached Table

County: San Bernardino County

Landowner / Mgr.: BLM

Quad Name: \_\_\_\_\_

Elevation: \_\_\_\_\_

T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_, \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4, Meridian: H ☐ M ☐ S ☐

Source of Coordinates (GPS, topo. map & type): GPS

T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_, \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4, Meridian: H ☐ M ☐ S ☐

GPS Make & Model Garmin Rhino 520

DATUM: NAD27 ☐ NAD83 ☐ WGS84 ☒

Horizontal Accuracy 3 meters \_\_\_\_\_ meters/feet

Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☒ OR Geographic (Latitude & Longitude) ☐

Coordinates: 558119 3854759

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

The 8,230-acre AFC assessment area, including the 1000-foot buffer surrounding the project boundary, is located in gently sloping, open desert scrub with several sandy alluvial fans eroding down from the steep rocky hills to the northeast. Vegetation is comprised primarily of Mojave creosote bush scrub with a smaller area of desert saltbush scrub as defined by the Holland (1986) classification of plant communities.

Other rare taxa seen at THIS site on THIS date: Desert tortoise, Mojave fringe-toed lizard, small-flowered androstephium, (separate form preferred) white-margined beardtongue

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☒ Good ☐ Fair ☐ Poor

Immediate AND surrounding land use: Dirt roads and trails, railroads, interstate highway, underground pipelines, past mining

Visible disturbances: Disturbed areas are associated with the aforementioned land uses

Threats: Anthropogenic activity

Comments:

Determination: (check one or more, and fill in blanks)

- ☐ Keyed (cite reference): \_\_\_\_\_  
☐ Compared with specimen housed at: \_\_\_\_\_  
☒ Compared with photo / drawing in: Mammals of California (Jameson et al, 2004)  
☐ By another person (name): \_\_\_\_\_  
☐ Other: \_\_\_\_\_

Photographs: (check one or more)

	Slide	Print	Digital
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes ☒ no ☐

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EO Index No. \_\_\_\_\_ Map Index No. \_\_\_\_\_

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: *Toxostoma bendirei*

Common Name: Bendire's Thrasher

Species Found? ☒ Yes ☐ No If not, why? \_\_\_\_\_  
Total No. Individuals 1 Subsequent Visit? ☐ yes ☒ no  
Is this an existing NDDDB occurrence? ☐ no ☒ unk.  
Yes, Occ. # \_\_\_\_\_  
Collection? If yes: \_\_\_\_\_  
Number \_\_\_\_\_ Museum / Herbarium \_\_\_\_\_

Reporter: URS Corporation  
Address: 1615 Murray Canyon Road, Suite 1000  
San Diego, CA 92108  
E-mail Address: \_\_\_\_\_  
Phone: (619) 294-9400

Plant Information

Phenology: \_\_\_\_\_% vegetative \_\_\_\_\_% flowering \_\_\_\_\_% fruiting

Animal Information

1 0  
# adults # juveniles # larvae # egg masses # unknown  
☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

See Attached Table

County: San Bernardino County Landowner / Mgr.: BLM  
Quad Name: \_\_\_\_\_ Elevation: \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_, \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4, Meridian: H ☐ M ☐ S ☐  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_, \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4, Meridian: H ☐ M ☐ S ☐  
DATUM: NAD27 ☐ NAD83 ☐ WGS84 ☒  
Source of Coordinates (GPS, topo. map & type): GPS  
GPS Make & Model Garmin Rhino 520  
Horizontal Accuracy 3 meters \_\_\_\_\_ meters/feet  
Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☒ OR Geographic (Latitude & Longitude) ☐  
Coordinates: 545778.1 3855391

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

The 8,230-acre AFC assessment area, including the 1000-foot buffer surrounding the project boundary, is located in gently sloping, open desert scrub with several sandy alluvial fans eroding down from the steep rocky hills to the northeast. Vegetation is comprised primarily of Mojave creosote bush scrub with a smaller area of desert saltbush scrub as defined by the Holland (1986) classification of plant communities.

Other rare taxa seen at THIS site on THIS date: Desert tortoise, Mojave fringe-toed lizard, small-flowered androstephium, (separate form preferred) white-margined beardtongue

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☒ Good ☐ Fair ☐ Poor

Immediate AND surrounding land use: Dirt roads and trails, railroads, interstate highway, underground pipelines, past mining

Visible disturbances: Disturbed areas are associated with the aforementioned land uses

Threats: Anthropogenic activity

Comments:

Determination: (check one or more, and fill in blanks)

☐ Keyed (cite reference): \_\_\_\_\_  
☐ Compared with specimen housed at: \_\_\_\_\_  
☒ Compared with photo / drawing in: Field Guide to Birds of North America (Kaufman)  
☐ By another person (name): \_\_\_\_\_  
☐ Other: \_\_\_\_\_

Photographs: (check one or more) Slide Print Digital  
Plant / animal ☐ ☐ ☐  
Habitat ☐ ☐ ☒  
Diagnostic feature ☐ ☐ ☐

May we obtain duplicates at our expense? yes ☒ no ☐



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Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

Date of Field Work (mm/dd/yyyy): 05/01/2008

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EO Index No. \_\_\_\_\_ Map Index No. \_\_\_\_\_

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: *Athene cunicularia*

Common Name: Burrowing Owl

Species Found? ☒ Yes ☐ No If not, why? \_\_\_\_\_

Total No. Individuals 2 Subsequent Visit? ☐ yes ☒ no

Is this an existing NDDDB occurrence? ☐ no ☒ unk.  
Yes, Occ. # \_\_\_\_\_

Collection? If yes: \_\_\_\_\_  
Number \_\_\_\_\_ Museum / Herbarium \_\_\_\_\_

Reporter: URS Corporation

Address: 1615 Murray Canyon Road, Suite 1000  
San Diego, CA 92108

E-mail Address: \_\_\_\_\_

Phone: (619) 294-9400

Plant Information

Phenology: \_\_\_\_\_% vegetative \_\_\_\_\_% flowering \_\_\_\_\_% fruiting

Animal Information

2 0  
# adults # juveniles # larvae # egg masses # unknown  
☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

See Attached Table

County: San Bernardino County Landowner / Mgr.: BLM

Quad Name: \_\_\_\_\_ Elevation: \_\_\_\_\_

T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_, \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4, Meridian: H ☐ M ☐ S ☒ Source of Coordinates (GPS, topo. map & type): GPS

T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_, \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4, Meridian: H ☐ M ☐ S ☒ GPS Make & Model Garmin Rhino 520

DATUM: NAD27 ☐ NAD83 ☐ WGS84 ☒ Horizontal Accuracy 3 meters \_\_\_\_\_ meters/feet

Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☒ OR Geographic (Latitude & Longitude) ☐

Coordinates: Several points: see attached table

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

The 8,230-acre AFC assessment area, including the 1000-foot buffer surrounding the project boundary, is located in gently sloping, open desert scrub with several sandy alluvial fans eroding down from the steep rocky hills to the northeast. Vegetation is comprised primarily of Mojave creosote bush scrub with a smaller area of desert saltbush scrub as defined by the Holland (1986) classification of plant communities.

Other rare taxa seen at THIS site on THIS date: Desert tortoise, Mojave fringe-toed lizard, small-flowered androstephium, (separate form preferred) white-margined beardtongue

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☒ Good ☐ Fair ☐ Poor

Immediate AND surrounding land use: Dirt roads and trails, railroads, interstate highway, underground pipelines, past mining

Visible disturbances: Disturbed areas are associated with the aforementioned land uses

Threats: Anthropogenic activity

Comments:

Determination: (check one or more, and fill in blanks)

- ☐ Keyed (cite reference): \_\_\_\_\_  
☐ Compared with specimen housed at: \_\_\_\_\_  
☒ Compared with photo / drawing in: Field Guide to Birds of North America (Kaufman)  
☐ By another person (name): \_\_\_\_\_  
☐ Other: \_\_\_\_\_

Photographs: (check one or more)

	Slide	Print	Digital
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes ☒ no ☐

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1807 13<sup>th</sup> Street, Suite 202  
Sacramento, CA 95811

Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

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EO Index No. \_\_\_\_\_ Map Index No. \_\_\_\_\_

Date of Field Work (mm/dd/yyyy): 05/01/2008

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: *Castela emoryi*

Common Name: Crucifixion Thorn

Species Found? ☒ Yes ☐ No If not, why? \_\_\_\_\_  
Total No. Individuals 3 Subsequent Visit? ☐ yes ☒ no  
Is this an existing NDDDB occurrence? ☐ no ☒ unk.  
Yes, Occ. # \_\_\_\_\_  
Collection? If yes: \_\_\_\_\_  
Number \_\_\_\_\_ Museum / Herbarium \_\_\_\_\_

Reporter: URS Corporation  
Address: 1615 Murray Canyon Road, Suite 1000  
San Diego, CA 92108  
E-mail Address: \_\_\_\_\_  
Phone: (619) 294-9400

Plant Information

Phenology: \_\_\_\_\_% vegetative \_\_\_\_\_% flowering \_\_\_\_\_% fruiting

Animal Information

# adults # juveniles # larvae # egg masses # unknown  
☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

See Attached Table

County: San Bernardino County Landowner / Mgr.: BLM  
Quad Name: \_\_\_\_\_ Elevation: \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_, \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4, Meridian: H ☐ M ☐ S ☐  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_, \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4, Meridian: H ☐ M ☐ S ☐  
DATUM: NAD27 ☐ NAD83 ☐ WGS84 ☒  
Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☒ OR Geographic (Latitude & Longitude) ☐  
Horizontal Accuracy 3 meters meters/feet  
Coordinates: \_\_\_\_\_

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

The 8,230-acre AFC assessment area, including the 1000-foot buffer surrounding the project boundary, is located in gently sloping, open desert scrub with several sandy alluvial fans eroding down from the steep rocky hills to the northeast. Vegetation is comprised primarily of Mojave creosote bush scrub with a smaller area of desert saltbush scrub as defined by the Holland (1986) classification of plant communities.

Other rare taxa seen at THIS site on THIS date: Desert tortoise, Mojave fringe-toed lizard, small-flowered androstephium, (separate form preferred) white-margined beardtongue

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☒ Good ☐ Fair ☐ Poor

Immediate AND surrounding land use: Dirt roads and trails, railroads, interstate highway, underground pipelines, past mining

Visible disturbances: Disturbed areas are associated with the aforementioned land uses

Threats: Anthropogenic activity

Comments:

Determination: (check one or more, and fill in blanks)

- ☒ Keyed (cite reference): The Jepson Desert Manual (Baldwin et al. 2002)  
☐ Compared with specimen housed at: \_\_\_\_\_  
☐ Compared with photo / drawing in: \_\_\_\_\_  
☐ By another person (name): \_\_\_\_\_  
☐ Other: \_\_\_\_\_

Photographs: (check one or more)

Plant / animal ☐ Slide ☐ Print ☐ Digital ☐  
Habitat ☐ ☐ ☐ ☒  
Diagnostic feature ☐ ☐ ☐ ☐

May we obtain duplicates at our expense? yes ☒ no ☐





<b>Areas of Expertise</b>	Wildlife Biology Biological Impact Assessment ESA/Wetlands Permitting Habitat Conservation Planning Wildlife Corridor Assessment Habitat Restoration Planning and Monitoring Biology Group Management
<b>Years of Experience</b>	29
URS	10
Other Firms	19
<b>Education</b>	PhD/1990/Biology/University of California, Los Angeles CPh/1983/Biology/University of California, Los Angeles BS/1979/Wildlife Biology/University of California, Davis
<b>Registration/Certification</b>	Certified Senior Ecologist/Ecological Society of America Certified Wildlife Biologist®/The Wildlife Society Training in ACOE Wetland Delineation Methods & Regulatory Policy OSHA Hazardous Waste Operations and Emergency Response Training/Section 1910.120 Training in Use of ArcView and Auto Cad R14 Software
<b>Overview</b>	<p>Dr. Mock has over 29 years of professional experience as a wildlife biologist and environmental consultant. He has served as principal investigator for studies of endangered wildlife, directing and participating in field investigations, data analysis, and preparation and review of technical reports and mitigation plans. Dr. Mock has extensive national and international experience in the assessment of impacts on biological resources, especially in relation to wetland ecosystems, coastal sage scrub, and endangered species. Dr. Mock has produced environmental impact assessments of various development projects throughout western US and the Pacific Rim in conformance with NEPA, CWA, and ESA. His specific area of expertise is in the ecology, management, and monitoring of vertebrate populations. He has conducted investigations of several sensitive bird species, including California least tern, brown pelican, least Bell's vireo, California gnatcatcher, coastal cactus wren, and bald eagle. He is experienced in landscape scale habitat evaluation modeling, preserve design, wildlife corridor assessment, and population viability analysis. He is certified as a Senior Ecologist by the Ecological Society of America and as a Certified Wildlife Biologist® by The Wildlife Society. Dr. Mock participates in all aspects of project management, including client liaison, budgeting, field investigations and research, supervision of field biologists, regulatory permitting assistance, agency liaison, report preparation and review, public presentations, and expert testimony. Dr. Mock has also served as a Lecturer at the University of San Diego and University of California, San Diego, where he has taught courses on biological assessment, principles of ecology, and wildlife management. Dr. Mock has thirteen publications in peer-reviewed science journals related to wildlife ecology, ornithology, and habitat conservation topics.</p>

Project Experience

ECOLOGICAL RESEARCH

**Ecological Studies of California Gnatcatcher (*Polioptila californica*), Home Capital Corporation, Weingarten, Siegel, Fletcher Group, Inc., and Skyline Wesleyan Presbyterian Church.** Served as project manager/principal investigator for a comprehensive ecological study of over 40 pairs of California gnatcatchers in the Rancho San Diego area in order to document home range size, habitat preferences, dispersal behavior, breeding/population biology, and effects of development.

**Foraging Ecology of California Least Tern (*Sterna antillarum browni*), Mission Bay, Department of Parks and Recreation, City of San Diego.** Served as project manager/principal investigator, responsible for documentation of least tern foraging habitats within Mission Bay Park.

**Habitat Characterization of Ephemeral Watercourses Receiving Treated Wastewater Effluents in the Arid Western U.S., Wastewater Management Department, Pima County, Arizona/EPA.** Served as project coordinator for the research team assigned to gather data at two southern California sites and acted as the lead wildlife biologist for the overall program.

**Behavioral Study of the Effects of Military Helicopter Activity on Breeding Least Bell's Vireo, U.S. Navy.** Served as the principal investigator for an intensive behavioral study of least Bell's vireo breeding adjacent to Camp Pendleton Marine Corps Air Station. This empirical study verified a theoretical model of noise impacts to breeding vireos.

**Study of the Effects Associated with Modification of Sand Grain-size on Shorebird Foraging Behavior, Department of Parks and Recreation, City of San Diego.** Project manager/principal investigator for an impact assessment of proposed modification of sand grain-size as an erosion-control measure in Mission Bay Park. Study involved documentation of changes in shorebird foraging behavior associated with erosion-control methods.

**San Diego Bay Waterbird Survey, U.S. Navy.** Project Director of a three-year study of waterbird use of north and central San Diego Bay. Involved weekly boat surveys of waterbirds and other sensitive species. This study allowed for a detailed analysis of spatial and temporal variation of waterbird abundance and habitat use within San Diego Bay.

**Behavioral Study of the Effects of Military, Fixed-wing Aircraft Activity on Idaho Bighorn Sheep, U.S. Air Force.** Dr. Mock participated in the experimental design and statistical analysis of this intensive behavioral study of bighorn sheep in the Owahee Range of western Idaho.

**Wildlife Corridor Study of the 23,000-Acre Otay Ranch, San Diego County, City of Chula Vista.** Project director responsible for documentation of wildlife corridors on Otay Ranch and the Miramar-Peñasquitos area of San Diego, made recommendations for the retention and protection of regionally significant corridors within and throughout the ranch.

**Wildlife Corridor Assessment for Canyon Crest Development Project, Brea California. City of Brea.** Senior biologist for a detailed, wildlife corridor assessment for the project vicinity around a proposed residential development

project in the City of Brea, California. Landscape-scale wildlife movement routes between open space areas associated with Carbon Canyon Road were identified and redundant routes through the project site were conserved as part of the project design.

**Cavallo Farms Wildlife Corridor Study, City of San Diego, CA. 2006.** – Sr. biologist for a wildlife corridor assessment of an 21-acre horse farm/training property located within an presumed MSCP wildlife corridor linkage in Del Mar, California. Study monitored 24 passive tracking stations and 5 camera stations within and surrounding the property for 8 weeks to identify tracks and scat of large mammal species, including mountain lion, bobcat, coyote, and southern mule deer. California gnatcatcher protocol surveys and identified territories were conducted throughout study area.

**Raptor Ecology and Management Study on Otay Ranch, City of Chula Vista.** Project director responsible for documenting nesting, roosting, and foraging areas of sensitive bird-of-prey species using radio telemetry methods. Species studied included golden eagle, northern harrier, black-shouldered kite, Cooper's hawk, and burrowing owl.

**Analysis of Brown Pelican Migration Patterns from Band Recovery Data, Los Angeles County Natural History Museum.** Principal investigator. Dr. Mock also assisted Dr. R.W. Schreiber in his field studies of the reproductive ecology of pelicaniform birds on Johnston Atoll, Central Pacific Ocean.

**Study of Growth Energetics and Food Intake of Nestling Thick-billed Murre (*Uria lomvia*) Pribilof Islands, Bering Sea, Alaska, Department of Ecology and Evolutionary Biology, University of California, Irvine.** Principal investigator for a study that included use of isotopically labeled water and body composition analysis. Dr. Mock was a member of a large research team led by Dr. G.L. Hunt, which studied the effects of colony size on the reproductive ecology and energetics of colonial seabirds.

**Comprehensive Studies of the Reproductive Energetics and Ecology of the Western Bluebird (*Sialia mexicana*), Department of Biology and Laboratory of Biomedical and Environmental Sciences, University of California, Los Angeles.** As a doctoral candidate, Dr. Mock's studies included comparative growth energetics of nestling western bluebird and ash-throated flycatcher (*Myiarchus cinerascens*), use of the doubly-labeled water method, time-activity budget analysis, nestling growth analysis, laboratory measurement of animal metabolism, body composition analysis, bird banding methods, and statistical analysis.

**Development of an *in vivo* Method to Estimate Lipid Reserves of Vertebrates, Laboratory of Biomedical and Environmental Sciences, University of California, Los Angeles.** As a research associate in Dr. Ken Nagy's Lab, Dr. Mock participated in validation studies of the cyclopropane methods to estimate lipid reserves of vertebrates.

**San Diego County Breeding and Wintering Bird Atlas Project, San Diego Natural History Museum.** A principal participant in the design and implementation of 6-year atlas project. Providing GIS mapping support and assistance in data analysis.



## **REGIONAL NATURAL RESOURCE PLANNING**

**Multiple Species Conservation Program, City of San Diego Clean Water Program.** Principal wildlife biologist directing the gap analysis, preserve design, wildlife corridor analysis, and resource assessment to delineate a network of potential preserve areas for a 900-square mile area in southwestern San Diego County. The objective of this three-year program is to develop a plan for the conservation and management of self-sustaining, viable populations of federally listed species and key candidate species and their habitats. Included in this program is the development of population viability analyses for California gnatcatcher and coastal cactus wren, a comprehensive GIS-based habitat evaluation model to aid in the relative valuation of habitat areas and identification preserve planning areas, and a long-term monitoring plan of conserved habitats and selected target species. This project received numerous citations and awards for excellence in resource planning.

**Carlsbad Subarea Habitat Conservation Plan/NCCP, Department of Planning, City of Carlsbad.** A principal participant in the evaluation of habitat and target species evaluations for proposed city-wide preserve system.

**California Gnatcatcher Management Plan for Fallbrook Detachment, Seal Beach NWS, U.S. Navy.** Dr. Mock participated in the development of a management and research plan to aid in the relative valuation of habitat areas and assignment of habitat management priorities within the study area.

**San Marcos Subarea Habitat Conservation Plan/NCCP, Department of Planning, City of San Marcos.** Providing technical assistance to City staff regarding habitat and target species evaluations for proposed city-wide preserve system; Technical review of subarea plan document.

**Rancho Palos Verdes Natural Communities Conservation Program Subarea Habitat Conservation Plan and EIR, City of Rancho Palos Verdes.** Project Manager and Technical Lead for program assisting the City of Rancho Palos Verdes in the first phase of a NCCP subarea plan for coastal sage scrub habitats. Phase I involves the following tasks: (1) assemble and review existing information on biological resources, land uses, and land-use constraints, (2) perform reconnaissance and focused biological surveys, (3) refine current vegetation mapping and assess the restoration/enhancement potential of disturbed habitats and non-native vegetation, (4) develop three preliminary preserve design alternatives being evaluated in Phase II of the program, and (5) interact with resource agencies, landowners, and local working group of interested parties to incorporate their concerns into the preserve design process. Phase II involved the preparation of the HCP document for public review and Phase III involved the preparation of the EIR and Implementing Agreement documents. Key sensitive species evaluated in the plan include Palos Verdes Blue and El Segundo Blue butterflies, California gnatcatcher, coastal cactus wren, and bright green dudleya.

**Desert Lands Habitat Conservation Plan, Metropolitan Water District.** Project Manager for HCP and CEQA/NEPA process to address potential incidental take associated with the operation and maintenance of the Colorado River Aqueduct. Program included sample plot assessments across 97,000 acres of MWD owned lands.

**North County Multiple Habitat Conservation Program, San Diego Association of Governments.** Principal member of a team of biologists

formulating a regional preserve design for a 1,000-square-mile area in northwestern San Diego County. This program is similar to the City of San Diego's MSCP program (see above).

**Key Deer Habitat Conservation Plan (HCP), Florida Department of Transportation and Monroe County.** A principal participant in habitat and target species assessments and the development of a conservation plan for Big Pine Key and No Name Key encompassing over 5,000 acres of potential Key Deer habitat.

**Adaptive Management Research Program for Sweetwater Reservoir Least Bell's Vireo Population, Sweetwater Authority.** Dr. Mock provided technical assistance in the development of testable hypotheses, including statistical power analyses for the habitat and population monitoring of the large least Bell's vireo population associated with the reservoir.

**Chevron Lokern HCP EIR, Chevron Oil Corporation.** Senior biologist overseeing EIR assessment of proposed HCP for over 14,400 acres of sensitive habitats and 31 sensitive species within Kern County.

**Santa Monica Mountains National Recreation Area General Development Plan EIS, National Parks Service.** Senior biologist overseeing biological assessment of the master plan for the 150,000-acre NRA in coastal Los Angeles County.

**California Gnatcatcher Sweetwater River HCP, Home Capital Corporation/San Diego Association of Governments.** Project manager and principal author of the first HCP developed for the California gnatcatcher. This HCP presented a program designed to ensure the continued existence of the California gnatcatcher in the Rancho San Diego/Sweetwater River Drainage and proposed to merge the management of the upland habitats with the riparian habitat proposed for management of the least Bell's vireo. This document presented information on the status and biology of the gnatcatcher, including a population viability analysis of the Sweetwater River gnatcatcher subpopulation as an isolate. The plan set guidelines for the conservation and management of coastal sage scrub designated as Conserved Habitat. Management actions were identified in a structured program within the Sweetwater River Drainage through preservation and active management of sage scrub habitat, specifically applied land use controls, and local private and public agreements.

**City-wide Biological Resource Assessment and Environmental Planning for the City of Poway, San Diego County, Department of Planning, City of Poway.** Task manager for a city-wide California gnatcatcher survey encompassing over 8,000 acres of suitable habitat and development of habitat assessment for coastal sage scrub habitats. Suitable California gnatcatcher habitat within Poway and its Sphere of Influence was identified and recommendations for habitat acquisition priorities and management of biological open space to sustain viable California gnatcatcher populations were made. This project won an Orchid award in the Orchids and Onions Community Awareness Program.

**Otay Mountain/Kuchamoa Cooperative Planning Area Biological Monitoring Plan, GIS Database Development, and Cultural Resources Study, BLM.** URS prepared a complete GIS Database, Biological Monitoring Plan, and Cultural

Resources Study for the Otay/Kuchamaa Cooperative Planning Area managed by the Bureau of Land Management in San Diego County, Ca. The objective of this task order was the development of the baseline database – developed as GIS data layers – needed to conduct the planning process and EIS analysis, including development of a reasonable range of land management alternatives. The focus of the baseline conditions was related directly to the biological and cultural resources for the management area. This project received a Merit Award from the San Diego AEP.

**BLM Resource Management Plan Revision, and EIS, and Biological Assessment, Socorro, New Mexico.** Biology task manager for impacts analyses on special status species, vegetation, wildlife and livestock grazing sections for an EIS and BA.

**Oceanside Subarea Habitat Conservation Plan/NCCP, Department of Planning, City of Oceanside.** A principal participant in habitat and target species assessments and the evaluation of a regional California gnatcatcher movement corridor between San Marcos and Camp Pendleton through Carlsbad and Oceanside.

**Point Loma Habitat Management Plan, U.S. Navy.** Participated in the development of a habitat evaluation model to aid in the relative valuation of habitat areas and assignment of conservation and habitat management priorities within the study area.

**Escondido Master Plan of Parks, Trails, and Open Space/EIR, Department of Planning, City of Escondido.** Task manager for identification of regionally significant wildlife corridors throughout the City of Escondido. Regional and site-specific analyses of Escondido's biological resources were made as part of the city's commitment to expand park and recreation facilities, establish long-term open space, and identify mitigation priorities. The regional analysis identified a primary wildlife corridor system to be retained within the city, and concentrations of high quality biological resources recommended for protection through open space easements or for use as mitigation.

**Wetlands Management Plan for the Island of Saipan, Coastal Resource Management Office, Commonwealth Government of the Northern Mariana Islands.** Project manager/zoologist for a comprehensive wetlands management plan for the island of Saipan. Study involved habitat evaluation and assessment. Recommendations for habitat acquisition priorities and management were made for the conservation of significant wetland resources on Saipan.

**The Oasis Project, U.S. Air Force, Air Combat Command.** Senior wildlife biologist involved in landscape level evaluation of biodiversity on two Air Force training ranges (in Idaho and North Carolina) compared to adjacent areas where land use patterns differ from the training ranges.

**DeLuz Habitat Mitigation Bank, The Eadington Companies.** Biological consultant assisting the formation and wildlife agency approval of a 141-acre San Diego County mitigation bank dominated by riparian and oak woodlands.

**San Elijo Hills Open Space Management, San Marcos, CA**  
Oversaw implementation of habitat management plan for 1000 acres of natural open space in the San Elijo Hills community. Monitored fire fuel management

task, invasive weed removal, habitat restoration, and prevention of unauthorized dumping. Included a population census of California gnatcatcher to measure success of the conservation effort. Prepared yearly summary reports.

**FEMA/CDF and FEMA/City of San Bernardino Prescribed Burn Program** - Prepared Programmatic Biological Assessments for proposed prescribed burns in San Bernardino County.

**FEMA/City of San Diego Vegetation Management Program** - Sr. Reviewer of Biological Assessment for proposed \$3M vegetation reduction projects in San Diego.

#### **BIOLOGICAL ASSESSMENT/MITIGATION**

##### **Department of Defense**

**SEA for MCAS Miramar Housing Project, U.S. Navy.** Sr. Biologist overseeing the biological impact assessment for a SEA document. Provided technical support to ESA Section 7 consultation through the delineation of historically occupied gnatcatcher habitat.

**USMC BEQ Housing Siting Studies – NEPA and Operational Constraints, MCB Camp Pendleton. US Navy.** Provided senior technical review of biological constraints assessments.

**Biological Assessment/EIS of BRAC Actions at MCAS Camp Pendleton, U.S. Navy.** Principal Investigator for an intensive behavioral ecology study of potential effects of helicopter overflight activity on the vocalization behavior of the endangered least Bell's vireo. This study also included a statistical analysis of vireo breeding success in relation to CNEL noise contours for the MCAS. Senior Biologist overseeing preparation of NEPA/EIS documents that focused on indirect effects to least Bell's vireo, southwestern willow flycatcher, and California gnatcatcher.

**Biological Assessment/EIS of BRAC Actions at NAS Miramar, U.S. Navy.** Senior Biologist overseeing biological assessment of realigning NAS Miramar as MCAS Miramar. NEPA/EIS documents that focused on potential adverse effect to vernal pool habitat and associated sensitive species, wetlands, California gnatcatcher, and regional wildlife corridors.

**Programmatic EIS for Testing and Operations at Pt. Mugu Air Warfare Center, U.S. Navy.** Senior Biologist overseeing biological assessment of testing and operation programs. Emphasis was on associated biological effects on sensitive waterbirds and marine mammals within the 36,000 square mile Sea Test Range in the Southern California bight.

**Biological Assessment/EA of Helicopter Outlying Landing Field, MCB Camp Pendleton, U.S. Navy.** Senior Biologist overseeing preparation of NEPA/ESA documents for proposed HOLF facility. Biological issues included potential impacts to vernal pool habitat and associated sensitive species, Stephen's kangaroo rat, arroyo southwestern toad, and indirect effects to California gnatcatcher and least Bells' vireo.

**Construction Biological Monitoring Program for VertRep Project, Camp Pendleton, Stronghold Electric/U.S. Navy.** Project manager for implementation of construction monitoring and environmental awareness program for contractor staff for a construction of a helicopter landing facility at a coastal bluff site.

Sensitive resources protected included vernal pools, coastal sage scrub, and California gnatcatcher.

**Homeporting Project EIS, San Diego Bay, U.S. Navy.** Senior Biologist assessing impacts on wildlife associated with dredging and site improvements for the homeporting of two aircraft carriers in San Diego Bay.

**San Nicolas Island Barge Landing EA, U.S. Navy.** Principal biologist for the biological assessment of existing barge landing activities and evaluation of alternative landing sites on the island. EA focused on potential impacts to marine mammals, snowy plover, seabird colonies and sensitive plants.

**Preconstruction Survey for Micronesian Megapode at the Saipan Radar Installation, Commonwealth of the Northern Marian Islands, U.S. Air Force.** Principal investigator that conducted focused surveys for the sensitive Micronesian megapode and recommended mitigation to minimize impacts to this species.

#### **Transportation Projects**

**Mammoth Lakes Airport Expansion EIS, FAA.** Senior biologists overseeing the biological assessment of new commercial service at regional airport. Issues included indirect impacts to breeding grounds of sage grouse.

**Port of San Diego/Airport Authority Demolition EIR, San Diego, CA.** Biology Task Manager for the EIR for the proposed demolition of existing aviation manufacturing facilities located on North harbor Drive in San Diego, CA. Wildlife agency coordination, and least tern nesting BMP measures are key issues.

**Natural Environment Study, Interstate 805 Widening Project, SANDAG.** Task Manager overseeing NES assessment, vegetation mapping, and T&E species surveys for 25-mile freeway widening project. Species included least Bell's vireo, San Diego fairy shrimp, and California gnatcatcher.

**Coastal Rail Trail EIR/CE, San Diego, California.** Biology Task Manager for an EIR/CE for a proposed trail that would start near Del Mar and run south to connect to the existing Rose Canyon bike path. Three proposed Class I bike path areas are the focus: Sorrento Valley Road between Carmel Valley Road and Carmel Mountain Road, Roselle Street to Eastgate, and Genesee (Nobel Drive) to Gillman Drive. The project includes multiple agency review including Caltrans/FHWA, City of San Diego and others.

**Carmel Valley Road Improvement Project EIR, City of San Diego.** Biology task manager.

**Construction Monitoring and Burrowing Owl Removal Program for SR 7, El Centro, Caltrans.** Project Manager.

**Exotic Predator Removal Program, San Mateo Creek and Lagoon, Caltrans.** Project Manager for an exotic predator control program at San Mateo Creek in San Diego County. Removed exotic species including bullfrogs, crayfish, and mosquito fish using gigs and seines to benefit native rare tidewater gobies and arroyo toads.

**Natural Environment Study (NES) of SR 11, East Otay Mesa Border Crossing, Caltrans.** Project manager for biological assessment of a 1,000-acre study area.

**Endangered Species Surveys for Interstate 5 Widening Project, Caltrans.**

**I-5/SR-56 Interchange Improvement Project EIR/EIS, Caltrans and City of San Diego.** Project manager for biological assessment and CEQA process.

**Biological Surveys for SR 52 Widening Project, Caltrans.** Project manager for biological assessment.

**Construction Monitoring for SR 73 Water Quality Facilities Upgrade Project, Caltrans.**

**Biological Assessment, Cajon Pass Triple Track Project, BNSF Railroad**

**Construction Monitoring and Burrowing Owl Mitigation Program for Union Pacific Track Removal Project, Union Pacific Railroad.**

**Wetland Mitigation Planning and Permitting Assistance for Light Rail Transit (LRT) Projects in San Diego County, Metropolitan and North County Transit Development Boards.** Project manager responsible for impact assessment, mitigation planning, and permitting assistance for several proposed commuter rail projects whose alignments must cross wetland habitat.

**North County Light Rail Transit Project EIR, North County Transit Development Board.** Principal wildlife biologist assessing potential biological impacts associated with a light rail transit line between Oceanside and Escondido.

**Biological Assessments of Four Road Widening Projects, County of San Diego.** Senior biologist overseeing the biological assessment of four road-widening projects in southeastern San Diego County. Sensitive species included least Bell's vireo and California gnatcatcher.

**Biological Assessments of Proposed Widening and Extension of San Elijo Road, Twin Oaks Valley Road, Rancho Santa Fe Road, and Melrose Drive, City of San Marcos.** Senior biologist and author of biological assessments for four critical regional road projects in San Marcos. Key biological issues included California gnatcatcher and regional wildlife corridors.

**Biological Assessment and EIR for Scripps-Poway Parkway, City of Poway.** Senior biologist for this major roadway project through the undeveloped portion of south Poway that provides a regional linkage between SR 167 and I-15. Major issues included California gnatcatcher, wildlife corridors, and potential conflicts with the City's habitat conservation plan.

**Sorrento Valley Road Improvement Project EIR, City of San Diego.** Senior biologist providing biological assessment for road project directly adjacent to Los Peñasquitos Lagoon. Sensitive resources included saltmarsh and riparian wetlands, clapper rail, Belding's Savannah sparrow, and California gnatcatcher and two regional wildlife corridors.

**Construction Monitoring and Burrowing Owl Mitigation Program for Union Pacific Track Removal Project, Union Pacific Railroad.** Project manager for implementation of biological monitoring program for track removal between Holtville and El Centro, Imperial County, California.

**Las Pilitas Bridge Replacement Project, County of San Luis Obispo.** Senior biologist providing technical review of Natural Environment Study documents.

**Rigel Street Bridge Replacement Project, City of San Diego.** Provided biological assessment and assistance in processing streambed alteration



agreement.

**Atchinson Avenue Bridge Replacement Project, City of Roseville.** Senior biologist overseeing the preparation of Natural Environment Study document and wetlands delineation for wetlands permitting process. Sensitive species include Coho salmon, steelhead, and valley oak

**Ford Avenue Bridge Replacement Project, Alameda Corridor Project Team.** Provided wetlands permitting assistance.

### **Energy Projects**

**Wind Implementation Monitoring Program (WIMP IV), County of Riverside Planning Department.** Biology Task Manager and lead consultant for the Planning Department to evaluate the ongoing and potential future impacts of Wind Farm Development within the San Gregorio Wind Resource Area. Document assessed visual, noise assessment, air quality, communication systems, navigation element study, fire protection, police services, retrofit and biological resources elements of an ongoing monitoring program.

**Phase I Avian Risk Assessment of Wind Energy Projects in Brisco County TX, RES America Developments.** Provided technical peer-review of consultant siting assessment for risk to avian mortality.

**Horizon Wind Energy Project, Barstow CA.** Biology task manager overseeing biological surveys for rare plants and desert tortoise within a 43,000-acre study area.

**CHEVRONTEXACO de MEXICO Onshore LNG Receiving Terminal, Baja California.** Senior biologist overseeing biological assessment of an offshore LNG terminal located near the Coronado Islands, Baja California, Mexico. Key issues included assessment of potential impacts to seabirds.

**Kinder Morgan California-to-Nevada Pipeline.** Biology Task Manager for 233-mile fuel pipeline project from Colton, CA to Las Vegas, NV. Task includes vegetation, jurisdictional waters, and sensitive species surveys and impact assessments.

**Niland Proposed Power Plant, Small Power Plant Exemption (SPPE), Imperial County, CA.** Imperial Irrigation District Peaker Development Project. Biological Construction Monitoring Task Manager for a 30-acre generating station, Imperial County.

**Starwood Midway Peaker Power Plant AFC.** Senior biologist overseeing biological assessment and ESA permitting of power plant project in Kern County.

**Panoche Peaker Power Plant AFC.** Senior biologist assisting in biological assessment and ESA permitting of power plant project in Kern County.

**Ausra Solar Thermal Energy Project AFC.** Senior biologist overseeing biological assessment and ESA permitting of solar thermal power plant project in San Luis Obispo County. Project involved intensive surveys for blunt-nosed leopard lizard on a 1000-acre project area.

**SES Solar One Energy Project AFC.** Senior biologist overseeing biological assessment and ESA permitting of power plant project in San Bernardino County.



Project involved intensive surveys for desert tortoise and Mohave ground squirrel on a 16,000-acre project site and 100-mile transmission line.

**SES Solar Two Energy Project AFC.** Senior biologist overseeing biological assessment and ESA permitting of power plant project in Imperial County. Project involved intensive surveys for desert tortoise and Mohave ground squirrel on a 8,000-acre project site and 8-mile transmission line.

**Bethel Solar Thermal Hybrid Power Project, Niland, Imperial Co. CA.** Senior biologist overseeing biological assessment of solar thermal and biofuels hybrid power plant project.

**San Joaquin Solar Hybrid, Coalinga CA AFC.** Senior biologist overseeing biological assessment of solar thermal and biofuels hybrid power plant project.

**CalEnergy Salton Sea Unit 6 Geothermal Power Plant AFC.** Project manager overseeing AFC document preparation. The California Energy Commission processed the licensing for construction and operation of the Salton Sea Unit 6 Geothermal Power Project, a proposed 185 net megawatt power plant in Imperial County, near the southern extent of the Salton Sea. Geothermal projects from the Salton Sea Known Geothermal Resource Area rarely come to the commission for action as most of these are much smaller, ranging from 10 to 45 megawatts, not requiring Energy Commission licensing. The Salton Sea Unit 6 project was unique based upon the size of the proposed plant, the location of the project near environmentally sensitive habitat, and the Sonny Bono Salton Sea National Wildlife Refuge. In addition, Imperial County has unique socioeconomic and geographic conditions. These factors provide the complex context within which this project was evaluated. Most CEC technical staff were not initially familiar with the area, or the unique aspects of a geothermal power facility deriving steam flashed directly from produced hot brine. The AFC document prepared by URS for the project provided an excellent platform for the CEC analysis, clearly presenting the necessary technical information. The complex information was presented in a format and context that highlighted the unique aspects of geothermal power production, and the environmental and socioeconomic conditions of the project area and this region. Notably, the CEC deemed the AFC “data adequate” within nine months of initial project application.

**Meadow Valley Generating Plant EIS, Southern Nevada.** Biology Task Manager overseeing desert tortoise and rare plant surveys and biological assessment for a 1,000 MW gas-fired combined cycle power plant proposed north of Las Vegas.

**Larkspur Power Facility AFC Amendment, San Diego County, CA.** Sr. Biologist for the Post-Certification Amendment to modify the Existing Larkspur Energy Facility in Otay Mesa, San Diego, to add a third generator.

#### **Infrastructure Facility Projects**

**Big Tujunga Dam Seismic Rehabilitation and Spillway Modification Project.** Senior Biologist assisting FEMA and Los Angeles County Department of Public Works in the CEQA/NEPA compliance for the proposed seismic retrofit of Big Tujunga Dam, near Sunland, Los Angeles County. URS is conducting biological surveys of the project area and is preparing CEQA/NEPA and Section 7 documents. Key issues include construction and dam operational impacts to Santa Ana Sucker and Arroyo Toad Designated Critical Habitat.

**Miramar General Development Plan EIR/EIS, City of San Diego Waste Management Department.** Participant in the evaluation of plan proposing a variety of landfill-associated facilities. Sensitive species, habitat, and wildlife corridors were issues of concern.

**Biological Assessment of Proposed International Airport at Maj Po Mash, Shenzhen, China, City of Shenzhen.** Principal investigator that evaluated potential impacts to biological resources at wetlands and bay adjacent to a proposed airport site.

**Emergency Water Storage Project, San Diego County Water Authority.** Principal author of Biological Assessment that included detailed estimation and justification of incidental take and habitat values of endangered species and their habitats expected to be impacted by the proposed reservoir project. Assessment was used in ACOE 404 permitting and ESA Section 7 consultation with the wildlife agencies. This project received an AEP planning award.

**Evaluation of Biological and Water Quality Monitoring Program of the Shanghai River, China, Shanghai Sewerage Authority.** Principal investigator responsible for assessment and recommendations for biological and water quality monitoring program for the Shanghai Sewerage System.

**Alvarado Water Filtration Plant Project, City of San Diego.** Senior biologist overseeing construction monitoring impacts to coastal sage scrub and California gnatcatchers. The gnatcatcher population within the project vicinity was monitored for 3 breeding seasons during project environmental review and implementation.

**Chandler Landfill Water Recharge Basin Demonstration Project, Rolling Hills, CA, Water Replenishment District of Southern California.** Senior biologist overseeing wetlands delineation and permitting assistance.

**Gilroy Landslide Remediation Evaluation, Santa Clara Valley Water District.** Senior biologist overseeing biological assessment and permitting for remediation of a landslide threatening a major water aqueduct. Sensitive species include red-legged frog, California tiger salamander, San Joaquin kit fox, and valley oak.

**SMUSD Administration Office Complex, San Marcos Unified School District.** Senior biologist overseeing biological assessment of vernal pool site proposed for a school district office complex.

**Nursery Products Composting Facility Initial Study (IS)/Mitigated Negative Declaration (MND)/Environmental Impact Assessment (EIR), San Bernardino, CA.** Biology Task Project for the CEQA assessment development of a 160-acre biosolids/green waste composting facility near Hinckley, San Bernardino County.

**Mountain Pass Mine Expansion Project, Molycorp, Inc.** Senior biologist overseeing biological assessment and wetland delineation for the 30-year expansion plan for an existing rare earth element mine in San Bernardino County. Sensitive species included desert tortoise and three rare deserts plant species.

#### **Residential Development Projects**

**EIR/Mitigation Monitoring Program for San Elijo Ranch Development, City of San Marcos.** EIR biologist and project manager for development and implementation of a mitigation monitoring program for the approved 2,100-acre San Elijo Ranch development. Tasks included evaluating potential impacts to sensitive plant and animal species and negotiating mitigation measures deemed acceptable to all concerned

parties. Sensitive plant and animal surveys were conducted and format mitigation plans were prepared. Habitat restoration plans and 404/1603 permit applications for impacts to wetlands, coastal sage scrub, and native grassland were prepared.

**Biological Assessment and Mitigation Planning, Calavera Heights Development, Carlsbad, Lyon Communities.** Project manager overseeing assessment of biological impacts and development and implementation of mitigation monitoring program. Also provided permitting assistance and resource agency liaison services.

**Otay Ranch Programmatic EIR, City of Chula Vista/County of San Diego.** Participated in biological assessment of proposed development and preserve design of 23,000-acre Otay Ranch in southern San Diego County. Major issues included potential impacts to wildlife corridors and a multitude of sensitive wildlife species and their habitats.

**On-call Consulting Services for Otay Land Company, Otay Land Co., LLC.** Senior biologist overseeing on-call environmental consulting services contract for 4,800-acre ownership within Otay Ranch planning area. Projects are listed below

- **OLC Otay River Parcel C EUC Soil Storage Project**
- **OLC Otay River Parcel C Development Project**
- **OLC Otay River Parcel B Development Project**
- **OLC Proctor Valley Parcel D Sensitive Resource Surveys**

**Skeet Range Redevelopment Project, Flat Rock Land Company, Chula Vista, CA** - Project manager for the biological assessment and ESA Phase I reports.

**Otay River Parcel A Development, Flat Rock Land Company, Chula Vista, CA.** Project manager for the biological assessment report.

**University Commons EIR and Mitigation Plan, City of San Marcos.** Biological assessment of a residential/commercial development and preparation and implementation of a biological mitigation monitoring program. Services included resource agency liaison and permitting assistance.

**Salt Creek Ranch EIR, City of Chula Vista.** Principal wildlife biologist assessing residential/commercial development and preparation of a biological mitigation monitoring program. Services included resource agency liaison and permitting assistance.

**Fanita Ranch EIR, City of Santee.** Participated in the biological assessment of a 5,600-acre specific plan area. Impacts to sensitive habitats, species and wildlife corridors were the primary issues of concern.

**Development Constraints Assessment for Tom Dyke Ranch, Saint Vincent De Paul Society.** Project manager overseeing detailed development constraints assessment for a proposed children's camp and conference center facility.

**San Marcos Highlands Biological Assessment, City of San Marcos.** Project manager overseeing assessment of biological impacts for a proposed residential development on a 250-acre site.

**Hampton Heights Project EIR, County of San Bernardino.** Provided assessment of biological impacts for a proposed residential and golf course development on a 470-acre site near Redlands, California.

**Willows Development Project, Temecula, Willows Investment Group.** Senior

biologist for wetlands delineation and permitting program for a 32-acre residential development.

**Vista Palisades Estates Project, Capital Pacific Homes.** Senior biologist for assessment of biological impacts for a proposed residential development on a 390-acre site near Vista, California.

**Benicia Specific Plan EIR, City of Benicia.** Principal wildlife biologist assessing a residential/commercial development within a 2,500-acre specific plan area. Impacts to sensitive habitats, species, and wildlife corridors were the primary issues of concern.

**East Otay Mesa Biological Assessment, County of San Diego.** Participated in the biological assessment of a 5,300-acre specific plan area. Impacts to sensitive habitats, species and wildlife corridors were the primary issues of concern.

**Santa Fe Valley/4S Ranch Biological Assessment, County of San Diego.** Participated in the biological assessment of two specific plans areas encompassing about 6,000 acres. Developed a habitat evaluation model to aid in the relative valuation of habitat areas.

#### **Coastal Development, Recreation Projects**

**ESPN X-Games, Mission Bay San Diego, ESPN.** Biological consultant providing technical support of California Coastal Commission permitting process. Provided biological assessment and proposed mitigation program for potential impacts to California least tern breeding colony.

**Mission Bay Park Shoreline Stabilization and Restoration Project and Natural Resource Management Plan EIR, City of San Diego.** Principal wildlife biologist in the biological evaluation of methods proposed for shoreline stabilization/restoration and the proposed long-term maintenance/enhancement plan for natural resources. Primary issues of concern included impacts to wetlands, least tern foraging habitat, and shorebird foraging habitat.

**The Headlands, Dana Point, Headlands Reserve, LLC.** Assisting with the processing of the development plan and California Coastal Commission coastal permit process for this 121-acre coastal property that supports California gnatcatcher, Pacific pocket mouse and several rare plants.

**Convair Lagoon Remediation Project EIR, San Diego Port Authority.** Principal biologist assessing impacts of hazardous waste remediation project on waterbird species using the lagoon.

**National City Marine Terminal Wharf Expansion Project EIR, San Diego Port Authority.** Principal biologist assessing impacts of wharf expansion project on mariner resources, including waterbird species.

**Biological Resource Inventory and Environmental Assessment of Proposed Marina at Ballona Lagoon, Marina del Rey, California, Silver Strand Marina Association.** Principal investigator for a comprehensive assessment of potential impacts to biological resources from a proposed marina at a 13-acre lagoon. Studies included documentation of California least tern and shorebird use of the lagoon.

**Biological Assessment of the Ormond Beach Area Concept Plan, City of**

**Oxnard.** Principal investigator for an evaluation of proposed resource management and development plan for coastal dune and wetland habitats of Ormond Beach.

**Biological Assessment of Elsinore Lake Management Plan, Lake Elsinore, California, Elsinore Water Authority.** Project biologist that evaluated impacts to biological resources of Elsinore Lake from a proposed water-level control facility.

**Poway Amphitheater EIR, City of Poway. Principal biologist assessing impacts of proposed amphitheater.** Impacts to sensitive plants, California gnatcatcher and a regional wildlife corridor were key issues addressed in the EIR.

#### **Habitat Restoration**

Dr. Mock has produced habitat restoration plans and overseen the monitoring of plan implementation and maintenance for several projects, including Dana Point Headlands, San Elijo Hills, San Elijo Road, Twin Oaks Valley Road, Mira Sorrento Place, San Marcos Universal Boot, MCAS Miramar erosion control.

#### **Other Relevant Experience**

**California Department of Fish and Game Biologist.** Prepared bird and mammal sections of the Department's biannual report to the State Legislature on the status of California's endangered wildlife; Conducted surveys for wintering bald eagles and riparian birds.

#### **Teaching**

**Principles of Ecology for Natural Resource Management, University of California, San Diego.** Dr. Mock taught a course for three years on ecology that emphasizes the application of ecological knowledge toward solving problems in conservation biology and regional land use planning.

**Wildlife Management, University of California, San Diego.** Dr. Mock taught a course for three years on wildlife ecology/management that emphasizes techniques for conservation of wildlife population and their habitats.

**Biological Assessment, University of San Diego.** Dr. Mock taught a course on Biological Assessment that emphasized the requirements of CEQA, NEPA and ESA. Project case histories were used to provide students with real world examples of the types of environmental issues, which typically need to be addressed in a biological assessment.

**Masters Thesis Committee Member, Geography Department, San Diego State University.** Dr. Mock served as an adjunct member of a thesis committee of a biogeography graduate student, who evaluated the umbrella species concept as it applied to the conservation of the California gnatcatcher. Dr. Mock advised the student on habitat reserve design and population viability analysis.

**Teaching Fellow, Biology Department, University of California, Los Angeles.** Dr. Mock taught laboratory sessions for various biology courses while a graduate student. Courses included ornithology, comparative physiology, cell physiology, animal behavior, and introductory biology.

	<p><b><u>Technical Reviewer</u></b></p> <p>Dr Mock provided peer review for manuscripts submitted to Conservation Biology, The Auk, Ecology, Condor, Ecological Monographs, Western Birds, <i>Ornis Scandinavica</i>,</p> <ul style="list-style-type: none"> <li>• Proceedings of Symposium on Wildlife Habitat Restoration and Management</li> <li>• Proceedings of a Symposium on Wildlife Habitat Restoration</li> <li>• Proceedings of the Wildland Interface II Symposium</li> <li>• Reviewer of Partners-in-Flight conservation plan for Southern California shrubland habitats</li> <li>• Natural Communities Conservation Planning (NCCP) Core Group Reviewer of the Research Agenda</li> <li>• Reviewer for selected sections and species accounts of <i>San Diego Bird Atlas</i></li> <li>• Reviewer of draft CDFG report on Bird Species of Special Concern</li> </ul>
<b>Professional Societies</b>	<p>Ecological Society of America The Wildlife Society Pacific Seabird Group, past Southern California Representative Society for Conservation Biology Association of Field Ornithologists California Native Plant Society</p>
<b>Publications</b>	<p>At the Crossroads 1980: A report on California's endangered and rare fish and wildlife. California Department of Fish and Game report to the California Legislature. 1982. Dr. Mock contributed sections pertaining to endangered birds and mammals.</p> <p>Christmas bird counts as indices of population status of brown pelicans and three gull species in Florida. American Birds 41: 1334-1339, 1987. R.W. Schreiber co-author.</p> <p>Eastern brown pelicans: what does sixty years of banding tell us? Journal of Field Ornithology 59: 171-182, 1988. R.W. Schreiber co-author.</p> <p>Energetics of growth and maturation in sympatric passerines that fledge at different ages. The Auk 108: 34-41, 1991. M. Khubesrian and D.M. Larcheveque co-authors.</p> <p>Daily allocation of time and energy by adult western bluebirds feeding nestlings. Condor 93: 598-611, 1991.</p> <p>Energetic constraints to the distribution and abundance of the California gnatcatcher. Western Birds 29:413-420.</p> <p>California gnatcatcher territorial behavior. Western Birds 29:242-257. K. Preston, M. Grishaver, E. Bailey, and D. King co-authors.</p> <p>California gnatcatcher vocalization behavior. Western Birds 29:258-268. K. Preston and M. Grishaver co-authors.</p> <p>Dispersal capabilities of the coastal California gnatcatcher: a landscape analysis of distribution data. Western Birds 29:351-360. E. Bailey co-author.</p> <p>Is the California gnatcatcher a good umbrella species for habitat reserve design? Western Birds 29:453-467. S. Fleury and J. O'Leary co-authors.</p> <p>Breeding behavior of the California gnatcatcher in the vicinity of Rancho San Diego, California. Western Birds 29:299-322. M. Grishaver and K. Preston,</p>

co-authors.

California Gnatcatcher – Dr. Mock contributed the species account in Partners-in-Flight conservation plan for Southern California shrubland habitats.

California Gnatcatcher – Dr. Mock contributed the species account in the *San Diego Bird Atlas*, authored by Phil Unitt in 2004.





## Rachel Avila

*Environmental Scientist*

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### Overview

Ms. Avila has experience working with native bird species in Sacramento and has experience in environmental surveying, monitoring, and permitting in California.

### Project Specific Experience

**Environmental Permitting and Environmental Monitoring, DWR Emergency Levee Repair, Sacramento, CA, Department of Water Resources, T&M, 2006-2007, \$1,300,000:** Worked on permits and did compliance monitoring for 26 levee repairs from Rio Vista to Princeton. Helped with preparation of a Biological Assessment for USFWS and NMFS, Wetland Delineation, Section 404 permit, Water Quality Certification, Streambed Alteration Agreements, Reclamation Board Lease, and State Lands Commission Lease. Prior to, during, and after construction Ms. Avila conducted environmental monitoring of the sites.

**Biologist, Solano Wind Project 2B and Phase 3, Solano Hills, CA, SMUD, T&M, 2007, \$180,000:** Ms. Avila conducted pre-construction surveys, avian use surveys, burrowing owl avoidance and exclusion, archeological surveys, and environmental compliance monitoring during construction.

**Environmental Surveyor, Willits Bypass Surveys., Willits CA, Caltrans, T&M, 2007, \$55,000:** Surveyed for Baker's Meadowfoam and other fauna and evaluated habitat for mitigation potential.

### Chronology

[Click **here** and type Dates 00/00-00/00: Company Name, Location]

### Contact Information

URS Corporation  
2870 Gateway Oaks Drive, Suite 150  
Sacramento, CA 95833  
Tel: 916.679.2000  
Direct: 916.679.2094  
Fax: 916.679.2900  
rachel\_avila@urscorp.com

### Areas of Expertise

- Environmental Permitting
- Environmental and Archaeological Surveying

### Years of Experience

With URS: 2 Years  
With Other Firms: 0 Years

### Education

BA/Anthropolgy/2003/University of California, Santa Cruz

<b>Areas of Expertise</b>	Endangered Species Surveys Construction Monitoring Biological Assessment
<b>Total Years of Experience</b>	19
URS	7
Other Firms	12
<b>Education</b>	BA / 1984 / Biological Sciences / California State University California Teaching Credential / 1986 / Life Science / California State University
<b>Publications</b>	Dispersal Capability of the California Gnatcatcher: A Landscape Analysis of Distribution Data. Western Birds 29:351-360, 1998. (P. Mock, coauthor).  California Gnatcatcher Territorial Behavior. Western Birds 29:242-257, 1998. (M. Grishaver, K. Preston, P. Mock, and D. King, coauthors).
<b>Endangered Species Recovery Permit</b>	U.S. Fish and Wildlife Service Recovery Permit Number TE-101151-1. California Gnatcatcher; Presence/Absence Surveys, and Nest Monitoring.
<b>Overview</b>	Mr. Bailey has over 19 years of experience as an environmental biologist. His responsibilities include focused surveys for California gnatcatcher, least Bell's vireo, arroyo southwestern toad, and desert tortoise; vegetation mapping; and technical report preparation in conformance with CEQA, NEPA, and ESA.
<b>Project Experience</b>	<p><b>Endangered/Sensitive Species Surveys</b></p> <p><b>Kinder Morgan Energy Partners Arroyo Toad Exclusion, Camp Pendleton, California</b> Conducted surveys for arroyo toad in and around pipeline construction area over a two-year period. Maintained pit traps and exclusion fencing to prevent take of arroyo toad. Conducted bullfrog removal from portions of San Mateo Creek.</p> <p><b>Wylie Construction Sewage Treatment Facility, Camp Pendleton, California</b> Conducted focused surveys for arroyo toad in and around construction site. Maintained pit traps and exclusion fencing to prevent take of arroyo toad.</p> <p><b>Solar I Desert Tortoise Surveys, Barstow, California</b> Conducted focused surveys for desert tortoise. Recorded tortoise locations, health indicators, and scat/burrow locations for the project.</p> <p><b>San Mateo Lagoon Exotic Predator Control, San Clemente, California</b> Conducted surveys for arroyo toad, southwestern pond turtle, and tidewater goby. Managed field task to remove non-native predators from the lagoon. Species removed include bullfrog, crayfish, and catfish. Prepared summary report for the project.</p> <p><b>State Route 73 Water Quality Basins, Orange County, California</b> Conducted focused surveys for California gnatcatcher and monitored nest sites. Communicated with construction supervisors to avoid impacts to active nests. Prepared summary report for the project.</p> <p><b>Multiple Species Conservation Plan (MSCP) California Gnatcatcher Population Census, San Diego, California</b> Conducted focused surveys for California gnatcatcher at conservation areas throughout San Diego County. Prepared final report of gnatcatcher population with discussion of the relative quality of the conservation areas.</p> <p><b>Solar II Flat-tailed Horned Lizard Surveys, El Centro, California</b> Conducted focused surveys for flat-tailed horned lizard and desert horned lizard. Recorded horned lizard locations and scat locations for the project.</p>

**Saint Michael's School Construction, Poway, California**

Conducted focused surveys for California gnatcatcher and delineated territorial boundaries relative to construction. Prepared project report detailing conservation efforts on-site.

**Federal Emergency Management Agency (FEMA) Fire Fuel Control, San Bernardino and Glendale, California**

Conducted focused surveys for California gnatcatcher at proposed fire fuel management sites. Prepared final report for the project.

**Emergency Storage Project, San Diego County Water Authority, San Diego, California**

Conducted focused surveys for California gnatcatcher and arroyo southwestern toad. Survey area included vicinity of Lake Hodges and San Vicente Reservoir. Prepared portions of the Environmental Impact Report for the project.

**Effects of Aircraft Noise on Least Bell's Vireo at Marine Corps Air Station Camp Pendleton, U.S. Department of the Navy, San Diego, California**

Recorded behavioral data of least Bell's vireo biweekly over five months. Behavioral data was compared to onsite noise data to test for possible effects on the species by aircraft noise.

**Rancho San Diego California Gnatcatcher Study, Home Capital Corporation**

Collected behavioral field data on California gnatcatchers throughout the breeding and non-breeding seasons. Assisted in mist netting and color banding of approximately 114 individuals. Analyzed territory size data for a gnatcatcher population of approximately 25 pairs.

**Miramar Landfill General Development Plan, City of San Diego, California**

Conducted focused surveys for California gnatcatcher, San Diego fairy shrimp, San Diego mesa mint, San Diego button celery, and willow monardella. Contributed to the biological technical report and environmental impact statement for the proposed facilities.

**South County Landfills, City and County of San Diego, California**

Conducted comprehensive field surveys for sensitive species and focused surveys for California gnatcatcher and arroyo southwestern toad in six proposed landfill sites. Prepared constraints level report for each site.

**Construction Monitoring**

**San Elijo Hills Open Space Management, San Marcos, CA**

Implemented and managed conservation plan for natural areas of San Elijo Hills. Monitored fire fuel management task, invasive weed removal, habitat restoration, and prevention of unauthorized dumping. Conducted yearly on-site population census of California gnatcatcher to measure success of the conservation effort. Prepared yearly summary report.

**Biological Construction Monitoring for Olivenhain Reservoir**

Project biologist monitoring California gnatcatcher nesting locations in relation to construction activity. This information allowed client to avoid impacts to Federally-listed Threatened California gnatcatcher.

**Biological Construction Monitoring for Dana Point Headlands**

Project biologist monitoring California gnatcatcher nesting locations in relation to construction activity, public use areas, and conserved habitat. This information allowed client to avoid impacts to Federally-listed Threatened California gnatcatcher, and to measure the success of the project conservation effort.

**Biological Construction Monitoring for VertRep Facility, U.S. Navy/Stronghold Electric**

Project biologist monitoring construction of a helicopter landing facility. Vernal pools, coastal sage scrub, and California gnatcatchers were the resources being protected.

**Biological Construction Monitoring of San Elijo Hills, San Elijo Hills, LCC**

Implemented monitoring of wetlands permit conditions.

**California Gnatcatcher Study, Skyline Wesleyan Lutheran Church**

Collected field data to assess construction noise impacts on the species over three years. Mist netted and color banded gnatcatchers within the study area. Delineated territories on site and recorded breeding behavior, nesting success, and dispersal of young. Prepared a letter report detailing the breeding home range of each pair onsite prior to construction.

**Kramer-Victor Powerline, Southern California Edison**

Conducted surveys for desert tortoise, Mojave ground squirrel, and rare plants along the Kramer-Victor power corridor. Additionally, monitored construction crews to prevent take of desert tortoise.

**Biological Assessment**

**Escondido Parks Master Plan, City of Escondido, Escondido, California**

Conducted field surveys for sensitive biological resources in proposed park sites and conservation areas.

**Upham San Marcos Project, Chester R. Upham, San Marcos, California**

Participated in biological resources survey of 35-acre site. Collected vernal pool soil samples for a fairy shrimp re-hydration study. Contributed to biological technical report.

**Biological Resource Inventory, City of Poway, California**

Conducted focused surveys for California gnatcatcher throughout the city and sphere of influence. Mapped habitats and sensitive resources.

**South Santa Fe Avenue Widening and Realignment, San Diego County Department of Public Works, San Diego, California**

Conducted field surveys to determine the presence or absence of least Bell's vireo in the project area. Recorded faunal species list and provided photographic documentation of habitat quality.

**Rancho Del Rey, City of Chula Vista, California**

Participated in a vernal pool study that included floral inventory and soil sample collection for a fairy shrimp re-hydration study.

**First San Diego River Improvement Plan, City of San Diego, California**

Managed field task to collect data on a 20-acre revegetation site. Data used to determine whether the project met required standards for success.

# **MICHELLE L. BALK**

## **Biologist**

**Balk Biological Consulting • P.O. Box 235316 • Encinitas, CA 92023-5316 • 760.672.4559 (mobile)**

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### **Education**

- M.S., Biology with Ecology and Evolution emphasis, University of Akron (1999)
- B.S., Zoology, Iowa State University (1997)

### **Professional Affiliations**

- California Native Plant Society
- Southern California Botanists
- California Botanical Society

### **Professional Certifications**

- Quino Checkerspot Butterfly 10a Survey Permit (USFWS Federal Permit)
- CDFG Rare, Threatened, and Endangered Plant Voucher Collection Permit
- Balk Biological Consulting has been certified as a Small Business Enterprise through the Coalition of Southern California Public Agencies

### **Professional Profile**

Ms. Balk has over six years of experience as a biological consultant in Southern California. Project experience includes general and sensitive floral and wildlife surveys, vegetation mapping, wetlands delineation and permitting, mitigation design and monitoring, and environmental document preparation. Ms. Balk has engaged in interagency coordination and public outreach efforts due to the complexities of each project. She has also participated in the development of habitat conservation plans pursuant to Section 10 of the Federal Endangered Species Act.

### **Relevant Project Experience**

- **Tejon Mountain Village Project, Kern and Los Angeles Counties, California.** Mapped vegetation and served as team leader for rare plant surveys on this 28,000-acre proposed housing development project.
- **State Route 79 Realignment Project, County of Riverside, California.** Performed wetlands delineations and surveyed for rare upland and wetland sensitive plant species along proposed roadway realignment.
- **Miramar Trunk Sewer Replacement and Permanent Access Project, City of San Diego Metropolitan Waste Water Department, City of San Diego, California.** Performed delineation of "waters of the United States" and wetlands under the jurisdiction of the U.S. Army Corps of Engineers and California Department of Fish and Game. Completed vegetation mapping and sensitive plant surveys on this 13-acre project site. Conducted focused plant surveys for the state- and federally-listed willowy monardella and Encinitas baccharis. Coordinated with others on specific project design and prepared biological resources report.

## **MICHELLE L. BALK**

### **Biologist**

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- **Mid-County Parkway, County of Riverside, California.** Served as team leader for sensitive plant surveys on publicly- and privately-owned parcels within potential roadway alignment. Verified/updated vegetation mapping for project site.
- **Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP), Riverside County, California.** Assisted in the development of the Multiple Species Habitat Conservation Plan for western Riverside County. Project involvement included research on potentially-covered bird species and synthesis of information into species accounts, reserve design, document preparation, interagency coordination, and public outreach.
- **Newhall Ranch Development Project, Newhall Land and Farming Company, Valencia, California.** Served as overall field task manager and as team leader for botanical surveys on Newhall Land and Farming Company parcels. Directed field teams in performing general sensitive plant surveys and focused surveys for the state-listed endangered San Fernando Valley spineflower on project sites totaling 16,500 acres in Los Angeles and Ventura Counties. Performed vegetation mapping for potential mitigation site.
- **Planning Area 1 Project, The Irvine Company, County of Orange, California.** Conducted potential native grassland mitigation site surveys and rare plant surveys for CNPS List 1B sensitive plant species including intermediate mariposa lily as a member of a team of botanists within a portion of the 4,200-acre project site.
- **Fanita Ranch Project, Santee, California, Barratt American, Inc.** Performed vegetation mapping, wetlands delineation, rare plant surveys, and Quino checkerspot butterfly surveys on 2,000 acre property and potential mitigation site.
- **Villages of San Jacinto Project, D.R. Horton, San Jacinto, California.** Performed vegetation mapping, wetlands delineation, and rare plant surveys on 475-acre property. Prepared biological technical report for California Environmental Quality Act documentation.
- **High Meadow Ranch Residential Development Project, Vicar Ventures, LLC, Community of Lakeside, County of San Diego, California.** Performed wetlands delineation and prepared wetlands permit applications, including conceptual mitigation plan, for 800-acre residential development project. Coordinated and negotiated with wetlands resource agencies and the U.S. Fish and Wildlife Service regarding sensitive species issues onsite.
- **Marine Corps Base Camp Pendleton, County of San Diego, California.** Conducted rare plant surveys for Pendleton button celery (*Eryngium pendletonensis*) on 246 acres.
- **La Borde Canyon Off-Highway Vehicle Park Study, County of Riverside, La Borde Canyon, Riverside County, California.** Conducted pitfall trapping to determine species composition and distribution of reptile species in La Borde Canyon, Riverside County,

# **MICHELLE L. BALK**

## **Biologist**

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California. Assisted in the installation and implementation of 20 reptile pitfall trap arrays and identified captured reptile species. Also conducted general wildlife and raptor nest surveys for the 2,600-acre study area.

- **Pole Maintenance Project/Bark Beetle Project, Southern California Edison, San Bernardino and San Jacinto Mountains, California.** Conducted botanical surveys and habitat assessments for sensitive plants at pole replacement locations and along electric lines at numerous locations in the San Bernardino and San Jacinto Mountains and the Mojave Desert.

### **Other Relevant Experience**

- Co-instructor, "Survey of the Sunflower Family (Asteraceae): Introduction to the Fall Bloomers" October 2005 and October 2006; "Survey of the Sunflower Family (Asteraceae): Introduction to the Spring Bloomers" March 2007; "Southern California Winter Plant Identification For Field Biologists" February 2006; " Rare Plant Identification and Survey Techniques for Southern California" March 2006
- Participant, Jepson Herbarium workshops: "Poaceae (Grass family)" May 7-8, 2005; "Spring Flora across Kern County" May 6-9, 2004; "Summer Annuals and Fall-Blooming Shrubs of the Eastern Mojave Desert" September 2003; "Morphology and Identification of Flowering Plants" March, 2003.
- Participant, "Basic Wetland Delineation" presented by the Wetland Training Institute, Inc. August 2-6, 2004.



# HEATH A. BARTOSH

Botanist, Wetland and GPS/GIS Specialist

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## **EDUCATION/TRAINING**

2001 Bachelor of Science Degree, Natural Resources Planning Humboldt State University, Arcata, California.

## **PROFESSIONAL EXPERIENCE**

2004–present Nomad Ecological Consulting, Martinez.  
2004-2005 Bear Republic Ecological Consulting, Martinez. Owner  
2002-2004 Sycamore Associates LLC, Walnut Creek.  
2001 Redwood Community Action Agency, Eureka.  
2000 Watershed Research and Training Center, Hayfork.  
1999-2000 Humboldt State University, Arcata.  
1998 Channel Islands National Park, Ventura.

Through a broad range of experience Mr. Bartosh has the ability to assess and analyze natural resource issues with expertise in botany, wetlands, Geographic Information Systems (GIS), and project and corporate management.

As a botanist, Mr. Bartosh has attained expertise thorough academia and extensive fieldwork studying the plants and vegetation communities throughout California, while focusing on distribution, soil and geologic relationships, endemism, rarity, and habitat conversion. Accompanying his knowledge of field botany is an understanding of the laws protecting special-status botanical resources such as the California Fish and Game (CDFG) Code, the Native Plant Protection Act (NPPA), California Endangered Species Act (CESA), the California Environmental Quality Act (CEQA), the Federal Endangered Species Act (FESA). This background provides him with the capability to conduct botanical resource assessments, vegetation community identification, floristic studies, and focused botanical surveys for special-status plant species following U.S. Fish and Wildlife Service (USFWS), CDFG and California Native Plant Society (CNPS) guidelines. He is also familiar with developing mitigation measures and restoration strategies for impacts to botanical resources. Geographically, he has conducted focused botanical surveys in many subregions of the California Floristic Province including the North Coast, Central Coast, San Francisco Bay Area, North Coast Ranges, South Coast Ranges, Sacramento Valley, San Joaquin Valley, Sierra Nevada, Channel Islands and the Transverse and Peninsular Ranges.

A proficiency in field botany along with an understating of the Clean Water Act, Rivers and Harbors Act, Porter Cologne Water Quality Act, California Coastal Act and CDFG Code compliments Mr. Bartosh's capability as a wetland delineator. He has extensive experience conducting wetland delineations in accordance with U.S. Army Corps of Engineers standards within the Sacramento and San Francisco districts and is also well versed in wetland mitigation planning and implementation.

Mr. Bartosh is an accomplished Geographic Information System (GIS) specialist with eight years of experience. This proficiency allows for visual representation and spatial analyses of findings and planning efforts resulting from botanical resource assessments, vegetation community mapping, floristic studies, special-status plants surveys, wetlands delineations, impacts analysis, mitigation preparation, and restoration. He is also able to utilize spatial data from other mapping and engineering platforms such as Computer Aided Design (CAD) data. Maps and exhibits he creates are used in support of a wide variety of biological and regulatory documents.

Areas of Expertise	Biological Resources
Total Years of Experience	< 1
URS	< 1
Other Firms	0
Education	B.S./2007/Animal Science and Wildlife Conservation/University of Delaware
Registration/Certification	N/A
Overview	<p>Brittany Benson is a biologist for URS in the San Diego office. While an undergrad, she participated in field projects in Costa Rica and Tanzania, Africa. She has a strong educational background in wildlife conservation.</p>
Project Experience	<p><b>Study Abroad, Tanzania. 2007</b>  Witnessed the unique challenges facing African Wildlife from the encroaching ecotourism and development of the land. Lived with various hunter-gatherer and pastoral societies to get a first-hand experience of how the aboriginal people conserve the wildlife and their vital natural resources. Biological data was collected and recorded on a daily basis.</p> <p><b>AmeriCorps Community Service Program, Newark, Delaware. 2005</b>  A Delaware State Parks field biologist that primarily assisted with the identification and eradication of invasive plant species in order to re-establish an old growth forest. Also aided with the restoration of the diamondback terrapin population.</p> <p><b>Study Abroad, Costa Rica. 2005</b>  Prior to the trip, formulated a hypothesis based on the species richness vs. the evapotranspiration index. Quantified and compared the field analyses data of the tropical biodiversity (specifically, mammals) for a cloud forest, rain forest, tropical forest, and deciduous forest and formulated a technical report.</p>



## Alyssa J. Berry

Staff Biologist

### Areas of Expertise

Monitoring Threatened and  
Endangered Amphibians of California  
Wildlife Surveys  
Habitat Restoration GPS and GIS  
mapping

### Years of Experience

With URS: < 1 Year  
With Other Firms: 2 Year

### Education

BA/Earth and Environmental  
Science/2004/Wesleyan University, CT

### Overview

Mrs. Berry is a field biologist with over two years of experience monitoring California Threatened and Endangered species and restoring native habitat. Alyssa's survey work has covered areas of the central coast and northern high desert region of California, focusing on California red-legged frogs and arroyo toads in the Los Padres National Forest, and the Northern spotted owl in the Klamath National Forest. More recently, her conservation efforts have included ecological restoration, concentrating on the re-vegetation of disturbed habitat with genetically local, native plant species. Alyssa has propagated site specific grassland, chaparral, riparian and coastal dune species for ecological restoration. She has aided in the design and installation of several small-scale restoration sites.

### Sensitive Species Experience

#### Blunt-nosed leopard lizard (*Gambelia sila*)

- California Valley, CA – Surveyed for Blunt-nosed leopard lizards using the CA Department of Fish and Game Protocol.

#### Desert Tortoise (*Gopherus agassizii*)

- Attended the Desert Tortoise Council's *Introduction to surveying, monitoring and handling techniques workshop*.

#### California Red-legged Frog (*Rana aurora draytonii*)

Over 20 positive contact hours

- Santa Maria, CA- Morning eye-shine surveys to clear soil remediation site.
- Guadalupe, CA- Evening eye-shine surveys to monitor presence/absence of CRLF in newly created wetlands within the Guadalupe Soil Remediation site.
- Los Padres National Forest - Surveyed for California red-legged frog egg masses, tadpoles, sub-adults and adults. Captured all life stages to measure morphological characteristics. Used Garmin GPS waypoints to map locations of individuals and areas of critical, potential and unsuitable habitat. Performed night surveys to monitor for breeding individuals, using eye-shine techniques.

#### Arroyo Toad (*Bufo californicus*)

Over 30 positive contact hours

- Los Padres National Forest - Surveyed for Arroyo toad egg strings, tadpoles, sub-adults and adults. Captured all life stages to measure morphological characteristics. Used Garmin GPS



waypoints to map locations of individuals and areas of critical, potential and unsuitable habitat. Performed night surveys to monitor for breeding individuals, using eye-shine techniques.

#### **Northern Goshawk (*Accipiter gentilis*)**

5 positive contact hours

- Klamath National Forest - Performed transect surveys while playing recorded vocalizations to solicit a response from Northern goshawks. Performed nest searches.

#### **Swainson's Hawk (*Buteo swainsonii*)**

20 positive contact hours

- Macdoel, CA – Performed nest searches to locate Swainson's hawk fledglings and pairs. Banded individuals and recorded band numbers of previously banded individuals.

#### **Habitat Restoration Experience**

- Composed annual restoration monitoring reports for the Santa Barbara Airport wetland restoration. Analysis included percent native a non-native cover, percent survival and percent cover by species.
- Assisted in the restoration of tidal wetlands at the Santa Barbara Airport by collecting local, California native plant seed and propagating native plants for re-vegetation.
- Assisted in restoration of disturbed coastal dunes by collecting genetically local, native plant seed.
- Assisted in the bluff's restoration at Nicholas Canyon State Park, Malibu by in-planting 2,000 native plants.
- Assisted in restoration of the Santa Barbara County landfill by installing irrigation systems, planning and planting 1,000 California native plants.
- Removed invasive weeds, including tamarisk, yellow/purple star-thistle and pampas grass from the Los Padres National Forest.

#### **Vegetation Survey Experience**

- Orcutt, CA- Conducted rare plant surveys throughout the Careaga oil field lease to document sensitive plant species within the property. Generated a report including maps of the observed species and recommendations for avoidance and conservation of identified species.
- San Bernardino NF, CA- Conducted vegetation surveys to map the presence/absence of the invasive weed: arrundo along river channels.



- Los Padres NF, Santa Barbara District, CA- Conducted vegetation surveys to map the presence/absence of yellow star thistle.
- Los Padres NF, Santa Barbara District, CA-Conducted rare plant presence/absence surveys for the Santa Ynez false-lupine (*Thermopsis macrophylla* var. *angina*), Late-flowered mariposa lily (*Calochortus weedii* var. *vestus*) and the Refugio Manzanita (*Arctostaphylos refugioensis*).

### **Contact Information**

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Alyssa\_Boinay@URSCorp.com



## Karen M. Brown

*Senior Environmental Scientist*

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### Key Skills

Project Management  
Phase I and II Environmental Site Assessments  
National Environmental Policy Act  
Air Force Center for Environmental Excellence NEPA Compliance  
Regulatory Compliance and Permitting  
U.S. Army Corps of Engineers Sections 404/10 Permitting  
Federal Emergency Management Agency Disaster Response  
U.S. Coast Guard Bridge Permitting  
Alaska Department of Natural Resources ROW and Leases

### Years of Experience

With URS: 4 Year  
With Other Firms: 5 Years

### Education

B.S., 1999, Environmental Science,  
University of South Florida,  
Tampa

### Registration/Certification

Certified Wetland Delineator  
40-Hour HAZWOPER Trained  
HAZWOPER Supervisor Trained  
Hazardous Material Transportation Safety Training  
State of Alaska Qualified Person  
First Aid and CPR  
FEMA-Community Relations Certification  
FEMA-Public Assistance Certification  
Incident Command System Certification

### Professional Societies/Affiliates

Society of Wetland Scientists  
Alaska Ground Water Association  
American Water Resources Association

### Overview

Ms. Brown has nine years of experience in the analysis of environmental impacts and National Environmental Policy Act (NEPA) regulations. She is experienced in conducting Phase I and II ESAs, and contaminated sites investigation and remediation. She has conducted environmental assessments (EA), environmental impact statements (EIS), environmental baseline surveys (EBS), Categorical Exclusions (CE), and coastal zone consistency determinations for the Air Force Center for Engineering and the Environment (AFCEE), National Park Service, Alaska Department of Transportation and Public Facilities (ADOT&PF), Bureau of Land Management (BLM), Bureau of Indian Affairs (BIA), and the Alaska Railroad Corporation (ARRC). Ms. Brown is knowledgeable and experienced in wetland, bridge and other project permitting and in analyzing floodplain and coastal issues. Her responsibilities have included project management, on-site supervision, compliance monitoring, and site characterization. Her related project experience is listed below.

### Project Specific Experience

**Integrated Concepts and Research Corporation (ICRC) and the Maritime Administration (MARAD), Incidental Harassment Authorization (IHA). *Deputy Project Manager.*** Responsible for coordination and submittal of an IHA application for in-water construction in Knik Arm in support of the Port of Anchorage expansion project. The project involved estimates of occurrence of the Cook Inlet stock of beluga whales in the project area.

**ICRC and MARAD, Fish Study. *Deputy Project Manager.*** Responsible for the coordination and conduct of a fish study to determine the effects of pile driving on anadromous fish occurring in the vicinity of the Port of Anchorage during construction of their intermodal expansion project.

**AFCEE, King Salmon Air Force Station Drinking Water and Wastewater Systems Evaluation. *Environmental Scientist.*** Assisted in conducting an evaluation of the drinking water and wastewater systems to determine compliance with revised Alaska Department of Environmental Conservation regulations.

**Alaska Natural Gas Development Authority (ANGDA), Right-of-way Joint Use Issues. *Environmental Scientist.*** Researched and developed a list of issues for concurrence and negotiation for joint use of the TransAlaska Pipeline System (TAPS) right-of-way by ANGDA and the TAPS owner companies.



**GCI, Phase I Environmental Site Assessment (ESA) and limited Phase II ESA oversight. *Environmental Scientist.*** Conducted a Phase I ESA for potential property transfer of a communications facility in Manley Hot Springs, Alaska. Provided oversight of a third party contractor selected by the facility's current owner to investigate and delineate a historic fuel spill on the property.

**Yukon River Inter-Tribal Watershed Council, Phase I ESAs. *Environmental Scientist.*** Conducted Phase I ESAs for Public Health Service Building in Arctic Village, Alaska and the Ghost Creek Drum Site in Holy Cross, Alaska. Both projects required completion of the ESAs under new American Society for Testing and Materials (ASTM) Standard E1527-05 and U.S. EPA regulations under 40 C.F.R. Part 312 Innocent Landowners, Standards for Conducting All Appropriate Inquiries. Tasks included interviews with Village residents, owners, operators and occupants; searches for recorded environmental cleanup liens; reviews of federal, tribal, state, and local environmental and historical government records (including background documents, maps and photographs); visual inspection of the property and of adjoining properties; and reporting.

**FEMA, Hurricane Response & Recovery. *Project Officer.*** Provided Community Relations and Public Assistance services to hurricane victims in Florida during the 2004 hurricane season.

- Provided individual assistance for those with immediate/special needs (i.e., loss of power, food, water, shelter).
- Provided individuals and local government agencies with necessary information to make use of FEMA assistance.
- Part of a field team that coordinated with local government agencies to compile data and assess damages for multiple counties.
- Investigated damage, produced cost estimates, and wrote project worksheets for local government agencies applying for FEMA project funding.

**Knik Arm Bridge and Toll Authority, Hydrologic Assessment. *Environmental Scientist.*** Working with Kinetics Laboratories, performed project field oversight and field technician for the collection of hydrologic data in Knik Arm from Fire Island to the Port of Anchorage to Port MacKenzie.

**Federal Emergency Management Agency (FEMA) Phase I, Hazard Mitigation Technical Assistance Program, Sewell Drive Subdivision Acquisition Project. *Environmental Scientist.*** The purpose of the project was for the Fairbanks North Star Borough, through FEMA and the Department of Homeland Security and Emergency Management (DHS&EM), Hazard Mitigation Grant Program, to acquire properties that had been repetitively impacted by floods. Ms. Brown assisted in Phase I ESA investigations for fifteen properties in Salcha, Alaska.

**First Factor Development, Inmachuk River Mineral Exploration. *Permitting Specialist.*** Responsible for permit applications and regulatory coordination for mineral exploration permits on state land. Permits include use of USACE Nationwide permits, ADNR, OPMP Coastal Zone Consistency Determination, and ADNR, OHMP Title 41 Fish Habitat Permit.

**Alaska Railroad Eielson Branch Realignment Project, Initial Site Assessment. *Environmental Scientist.*** Ms. Brown was the author for the Initial Site Assessment, which documented existing environmental contamination along the nearly 20-mile project corridor. She conducted site visits for the 20-mile corridor, researched and gathered historical data, interpreted aerial photographs and topographic maps, and reviewed federal, state, and municipal databases. Using the gathered information, a scoring analysis was prepared to evaluate environmental risks associated with potential right-of-way acquisition.

**Knik Arm Bridge and Toll Authority, Knik Arm Bridge Project, Initial Site Assessment. *Environmental Scientist.*** Ms. Brown was the author for the Initial Site Assessment, which documented existing environmental contamination along the nearly 30-mile project corridor. She conducted site visits for the 30-mile corridor, researched and gathered historical data, interpreted aerial photographs and topographic maps, and reviewed federal,





state, and municipal databases. An analysis was prepared to evaluate environmental risks associated with potential right-of-way acquisition.

**Agrium Bluff Stabilization Project. *Permitting Specialist.*** Outlined necessary state and federal permits needed for construction of bluff stabilization measures that has been severely undermined by storms, ice, and wave action in Cook Inlet.

**ChevronTexaco, Former Chevron Kenai Refinery, Nikiski, Alaska. *Permitting Specialist.*** Outlined necessary permits for the Chevron's facility in Nikiski Alaska to construct a road adjacent to their property on Kenai Peninsula Borough right-of-way to the state-owned tidelands below the bluff of the facility to provide public access to the beach.

**Confidential Client, Environmental Due Diligence for Major Development Project in Alaska. *Environmental Scientist.*** Broad spectrum consideration of environmental issues, public perception, and regulatory environment facing development project.

**Confidential Client, Maritime Barge Transport of Coal in Cook Inlet, Alaska. *Permitting Specialist.*** Evaluation of environmental and permitting implications related to coal storage, loading, transport, and unloading for potential port locations in Knik Arm and Cook Inlet. Key issues include air quality, construction and operation of in-water structures, and beluga whales.

**Contaminated Sites Investigation, Clear Air Force Station, Alaska, AFCEE. *Drill Rig Geologist.*** AFCEE contracted URS to investigate 15 sites for the presence of fuels, solvents, sludge, and mixed waste. During the field program was the drill rig geologist at remote Clear Air Force Station, Alaska. Specific duties included logging and sampling soil borings, overseeing the installation of groundwater monitoring wells; conducting groundwater, surface soil, and subsurface soil screening and confirmation sampling; conducting health and safety briefings.

**Fairbanks Natural Gas, Point MacKenzie Peak Shaving Facility. *Project Manager and Permitting Specialist.*** The existing LNG Production Facility will become a peak shaving facility after the North Slope facility is operational. Permits include a Title V Air Quality permit from the Alaska Department of Environmental Conservation (ADEC), State of Alaska Fire Marshall Permit and Matanuska-Susitna Borough Land Use permits. Coordination with the applicable regulatory agencies is underway.

**Fairbanks Natural Gas, North Slope Production Facility. *Project Manager and Permitting Specialist.*** Accountable for permit applications and regulatory coordination for a liquefied natural gas production facility on the North Slope. Permits include an U.S. Army Corps of Engineers (USACE) wetlands permit; Federal Aviation Administration (FAA) obstruction determination; North Slope Borough Land Use Permit; Alaska Department of Natural Resources (ADNR), Division of Mining Land and Water (DMLW) land lease; and ADNR, Office of Project Management and Permitting (OPMP) Coastal Zone Consistency Determination. Ms. Brown negotiated with federal, state, and local regulatory agencies to obtain permits on an expedited schedule to begin project construction in early 2007. The project was completed early and under budget.

**Alaska Railroad Fort Wainwright Rail Realignment Project. *Permitting Specialist.*** The realignment of Fort Wainwright is an off shoot of the Eielson Branch Realignment Project described below. Permits include USACE Sections 404 and 10 permits; U.S. Coast Guard Bridge Permit; ADNR, Office of Habitat Management and Permitting (OHMP) Title 41 Fish Habitat Permit; ADEC, Section 401 water quality certification; BLM land exchange or right-of-way (ROW), and Army land exchange or ROW. Coordination with regulatory agencies is occurring on an expedited schedule. ARRC would like to begin construction in summer 2007.

**Alaska Railroad Eielson Branch Realignment Project. *Project Manager and NEPA Specialist.*** Responsible for production of an EA for a 20-mile railroad track realignment project in interior Alaska. Ms. Brown worked with the environmental and public relations departments at the Alaska Railroad to successfully coordinate and conduct public and agency scoping. The project required coordination of field surveys and technical reports to support the EA. Technical report subjects included wetlands and waters of the U.S., contaminated sites, essential fish habitat, noise and vibration, cultural resources, and a transit study.



**Knik Arm Bridge and Toll Authority, Knik Arm Bridge Project. *Deputy Project Manager and Permitting Specialist.*** In charge of supplying regulatory services for the proposed bridge project. During Phase I of the project, Ms Brown's tasks included development of a regulatory and permitting compliance strategy, evaluation of data gaps, providing an overview of contaminated sites, and preparation of a transition report from Phase I to Phase II. Phase II of the project includes regulatory coordination and permitting and cumulative effects evaluations. Coordination and permitting efforts include USACE Section 404/10 permit; U.S. Coast Guard bridge permit; BLM ROW grant; ADEC Section 401 water quality certification; ADNR, DMLW ROW and irrevocable easement; ADNR, OHMP Title 41 fish habitat permit; ADNR, OPMP coastal zone consistency determination; local floodplain, right-of-way and land use permits.

**BLM, Ring of Fire Resource Management Plan and Environmental Impact Statement (RMP/EIS). *Environmental Scientist.*** Ms. Brown is an author for preparation of the Ring of Fire Resource Management Plan/EIS for the BLM, Anchorage Field Office. The planning area encompasses 1.3 million acres distributed across 2,500 miles from Southeast Alaska to the western tip of the Aleutian Islands.

**ADOT&PF, Juneau Access Improvements Supplemental Environmental Impact Statement. *Environmental Coordinator.*** Ms. Brown was responsible for assisting ADOT&PF will preparing permit applications, permitting project description, and site figures. assimilating information contained in technical reports into Affected Environment and Environmental Consequences sections of the EIS. She assisted in editing the EIS.

**BIA, Cordova Oil Spill Response Center, EIS. *NEPA and Permitting Specialist.*** Ms. Brown is the author of the Floodplains Technical Report and was accountable for assimilating information contained in technical reports into Affected Environment and Environmental Consequences sections, and senior review for the Wetlands and Waters of the U.S. Technical Report. Ms. Brown is assisting BIA in completing applications for the required permits, including USACE Sections 10 and 404 permits, ADEC Water Quality Certification, and local land use permits.

**Ketchikan Pulp Company, USACE, and Section 404 Permit for Landfill Outfall Construction. *Environmental Coordinator.*** Ms. Brown obtained the 404 Permit for outfall construction and coordinated with the ADNR, OPMP to obtain a coastal zone consistency determination.

**Confidential Client, Individual USACE Wetlands Permit, Anchorage, Alaska. *Project Manager.*** Responsible for the successful completion of Section 404 Individual Wetlands Permit for the construction of an industrial development in Anchorage, Alaska. The application required a hydrologic analysis, an alternatives analysis, mitigation plan, and a Section 401 certification from the State of Alaska. Duties included the coordination with concerned local, state, and federal agencies, as well as the public regarding comments for the project.

**Confidential Client, Stream Restoration Design and Individual USACE Wetlands Permit, Anchorage, Alaska. *Project Manager.*** Responsible for the application of a Section 404 Individual Wetlands Permit for construction in Anchorage, Alaska. The site required the restoration of a disturbed stream on the property. The application required a hydrologic analysis, mitigation plan, coastal zone consistency determination and a Section 401 certification from the ADEC. Duties included coordination with concerned local, state, and federal agencies, as well as the public regarding comments for the project.

**Environmental Reconnaissance Study, Fire Island, Alaska. *Assistant Project Manager.*** Responsible for an environmental study to determine the feasibility of constructing a port on Fire Island, and the construction of a causeway or bridge and linear transportation route to and through the Municipality of Anchorage. Duties include coordination with the USACE and a native corporation regarding input and comments for the project.

**Port of Anchorage, Environmental Assessment. *Environmental Coordinator.*** Responsible for an EA to determine feasibility of infrastructure improvements and port expansion in intertidal zones. The project required the preparation of a Finding of No Significant Impact (FONSI).



**Kenai National Wildlife Refuge, Alaska, Environmental Impact Statement. *Environmental Coordinator.***

Participated in the document preparation of an EIS for natural gas exploration, development, and production on public lands in the Kenai National Wildlife Refuge, including analyses of socioeconomics, environmental justice, demographics, and view shed.

**Clearing and Grading, Fill, Flood Hazard, and Building Permits. *Project Manager.*** Responsible for various construction and land clearing projects in Anchorage, Alaska, requiring documentation and proof of consistency with the Municipality of Anchorage's Building Safety Division's permitting requirements.

**Construction Monitoring and Support, Anchorage, Alaska. *Project Coordinator.*** Project coordinator and on-site representative for the construction of a railroad loop corridor, service road, petroleum rail loading rack, and petroleum pipelines in the Port of Anchorage area. Duties included a baseline study of former site activities and previous impacts on the property, characterization activities for soil and groundwater for simultaneous construction projects, and coordination with the ADEC.

**Various Air Force Bases, Environmental Baseline Surveys. *Environmental Coordinator.*** Conducted Environmental Baseline Surveys for housing and utility privatization projects at MacDill Air Force Base, Cape Canaveral Air Force Station, and Patrick Air Force Base in Florida; Hill Air Force Base, Utah; and Wright-Patterson Air Force Base, Ohio. Tasks included data acquisitions, interviews, visual site inspections, document reviews, assessment of the transferability of property following CERCLA-based criteria, and report preparation in accordance with AFCEE EBS guidelines.

**AFCEE, Hurlburt Field, Florida, and Environmental Assessments. *Project Manager.*** Project manager and principle author of an EA to assess the feasibility of the bed down of the CV-22 Osprey aircraft at Hurlburt Field, Florida. This required the coordination of public meetings/comments in four states.

**AFCEE, MacDill Air Force Base, Florida, Environmental Assessments. *Environmental Coordinator.*** Managed and/or participated in the completion of EAs for twelve building projects in a flood zone on MacDill Air Force Base. All of the projects required floodplain analyses and the preparation of Coastal Zone Consistency Determinations, FONSI, and Finding of No Practicable Alternative (FONPA) documents.

**AFCEE, Environmental Assessment, Cape Canaveral Air Force Station, Florida. *Project Coordinator.*** Project coordinator and author of an EA to determine the feasibility of launching the Advanced Extremely High Frequency (AEHF) Satellite from Cape Canaveral Air Force Station, Florida. The project required the preparation of a FONSI and Coastal Zone Consistency Determination documents.

**AFCEE, Environmental Assessment, Buckley Air Force Base, Colorado. *Project Coordinator.*** Project coordinator and principle author of four EAs to determine the feasibility of various projects. The projects included the use of training areas and various training facilities on and off base, constructing new munitions facilities, constructing and relocating POL facilities, and constructing a new air traffic control tower and firehouse. The projects required the preparation of FONSI and/or FONPA documents. Some projects required the preparation of CE documentation.

**Site Remediation, Pedro Bay, Alaska. *Assistant Project Manager.*** Assistant project manager and on-site supervisor to test the effectiveness of and to conduct a modification to a water remediation unit to address groundwater contamination for a remote site in Alaska. Duties also included coordination with the Alaska Department of Environmental Conservation (ADEC), coordination of waste removal from the remote site, and community relations.

**Site Characterization, Cape Romanzof, Alaska. *On-Site Representative.*** Responsible for the removal of petroleum containing aboveground storage tanks. Duties included soil and waste stream characterization and analytical sampling, coordination of waste removal and disposal, and report preparation for a remote site in Alaska.



**Site Remediation, Various Projects, Anchorage, Alaska. *Assistant Project Manager/On-Site Supervisor.***

Responsible for conducting monitoring well installations, underground storage tank excavation, analytical sampling, field screening, field chemistry experiments, drum testing, soil vapor feasibility testing, remediation unit installation, and coordination of hazardous and non-hazardous waste removal and disposal for various contaminated sites in Alaska.

**Emergency Response, Kotzebue, Alaska. *Assistant Project Manager/On-Site Supervisor.*** Responsible for an emergency response cleanup excavation of petroleum hydrocarbon-impacted soils. Duties included coordinating delivery of equipment and manpower in a remote area of Alaska to effect removal of the frozen soils, analytical sampling, and thermal soil remediation. The ADEC granted alternate cleanup levels and a no further remedial action planned status for the site.

**Site Assessments, Sunny Hill Farms, Florida. *Environmental Scientist.*** Performed Phase I and II site assessment activities including soil and groundwater sampling on a Southwest Florida Water Management District reclamation site in Levy County, Florida.

**Groundwater Monitoring and Site Characterization, Superfund Site, Tarpon Springs, Florida.**

***Environmental Scientist.*** Active participant in a groundwater monitoring and site characterization program at the Stauffer Superfund site in Tarpon Springs, Florida. The project required coordination with the U.S. Environmental Protection Agency and the public.

**Site Assessment and Remediation, Various Sites, Florida. *Environmental Scientist.*** Supervised subcontractors during the installation and abandonment of monitoring wells. Duties included soil and groundwater characterization and analysis, and on-site Health and Safety Officer. Ms. Brown participated in a thermal soil remediation project for the cleanup of pesticides in soil.

**Site Assessments, Peak Oil Tampa, Florida. *Environmental Scientist.*** Conducted site assessment activities including groundwater, soil, surface water, and sediment sampling, and performed field chemistry experiments in wetlands at the Peak Oil Superfund site.

**Wetland Monitoring, Various Sites, Florida. *Environmental Scientist.*** Performed wetland monitoring duties as part of an ongoing program for the Florida Department of Environmental Protection to determine the success of wetland mitigation sites. Duties included determining the survival rate of vegetation and water quality monitoring.

**Lake Dorothy, City of St. Petersburg; Cape Canaveral Air Force Station, U.S. Air Force, Florida.**

***Environmental Scientist.*** Performed various coastal and inshore fish identification and essential fish habitat surveys in Florida.

**Saddlebrook Resort and Country Club, Pasco County, Florida. *Environmental Scientist.*** Participated in wetland mitigation monitoring for new construction.

**Corkscrew Wellfield, Lee County, Florida. *Environmental Scientist.*** Assisted in wetland compliance and vegetation monitoring.

**Lake Dorothy, City of St. Petersburg, Florida. *Environmental Scientist.*** Active participant in wetland vegetation monitoring, water quality analysis, freshwater fish identification, and essential fish habitat surveys to determine compliance at Lake Dorothy in Hillsborough County, Florida.

## **References**

Areas of Expertise	<p>Botany  Plant Taxonomy of Southern California  Botanical Surveying and Habitat Identification  Rare Plant Surveying and Identification  Habitat Restoration  Wetland Delineation  Dudleya</p>
Total Years of Experience	6
URS	3
Other Firms	3
Education	<p>MS/2001/Systematic Botany/San Diego State University  BS/1995/Biology/San Diego State University  2005/Wetland Delineation Training/Wetland Training Institute</p>
Registration/Certification	N/A
Overview	<p>Darren Burton has six years of relevant experience in botany, plant taxonomy, and vegetation surveys, and is an expert on the flora of Southern California. He has extensive field experiences in vegetation mapping, habitat verification and ground-truthing, plant identification, and rare plant surveys, as well as in conducting vegetation transects and performing wetland delineations. Mr. Burton currently serves as the lead Botanist for URS' San Diego Office, and is in charge of vegetation surveys for several currently ongoing projects, each of which include accurate identification and mapping of habitat types, comprehensive regional species lists, and working closely with the in-house GIS group to produce maps, as well as writing all pertinent documents and communicating valuable information between clients and colleagues. He has worked with the Military Planning Group at URS' San Diego Office to help develop accurate vegetation maps and locate rare plant populations on military-owned land. Additionally, he also frequently serves as botanist for numerous FEMA projects in San Diego County, which involve identification of critical habitat used in firebreak analyses. Mr. Burton has a wide breadth of knowledge of the flora of California and he has often been able to use his knowledge in order to achieve project compliance in a timely manner.</p>
Project Experience	<p><b>Current Projects:</b></p> <p><b>Marine Corps Air Station at Miramar, San Diego, CA</b> – This project is an erosion and habitat restoration project located in an area of active military training. Responsibilities include managing and coordinating all aspects of implementation of erosion control and re-establishment of native vegetation at two sites located within the station grounds. Also in charge of preparing all relevant deliverable documents and communicating with the client and subcontractor.</p> <p><b>City of San Diego, Mira Sorrento Parkway, San Diego, CA</b> – This project involves the revegetation of several acres of coastal sage scrub along a newly created road on property managed by the City of San Diego. Responsibilities include identifying and reporting all matters regarding native habitat restoration to the client, meeting with the client and subcontractors to go over habitat mitigation concerns, and writing and delivering all relevant reports to the client.</p>



**Caltrans, State Route 805, San Diego, CA** - This project involves conducting biological surveys along areas that may be affected by a freeway widening project. Responsibilities include identifying and mapping all vegetation habitat types within the study area along State Route 805, within the specified study site, and coordinating field work for subconsultants. Also conducted jurisdictional waters delineation and assisted with rare bird surveys of California gnatcatcher and Least Bell's vireo.

**San Elijo Hills, San Marcos, CA** - This project involves several acres of newly created habitat (coastal sage scrub and riparian) that serves as partial mitigation for the construction of a new master planned community. Responsibilities involve vegetation transect data collection within native plant mitigation areas and quantitative and qualitative analyses of those data. Also produce accompanying document reports and maps, both quarterly and yearly.

**Previous Projects:**

**Parcel C, Otay Land Co., Chula Vista, CA** - Responsibilities included identifying the vegetation habitat types and creating a list of the plant species within the study area. Also conducted rare plant surveys and mapped existing locations of rare plants. Produced accompanying document report and maps.

**York Long Point Associates, Rancho Palos Verdes, CA** - Conducted rare plant surveys, identified areas requiring possible mitigation, and drafted memo report.

**Nursery Products, Riverside Co., CA** - Conducted vegetation habitat and rare plant surveys, and assisted with listed wildlife surveys. Assisted in producing accompanying document report and maps.

**Lakeside Land Company, Lakeside, CA** - Vegetation transect data collection, habitat mitigation monitoring, and updating recommendations for client regarding habitat restoration and appropriate species lists for upland and riparian communities. Assisted in producing accompanying document report and maps.

**Sloan Canyon, El Cajon, CA** - Vegetation transect data collection, habitat mitigation monitoring, and updating recommendations for client regarding vegetation restoration activities. Assisted in producing accompanying document report and maps.

**Dana Point Headlands, Dana Point, CA** - Responsibilities included conducting plant transects, mapping vegetation types, and monitoring habitat restoration activities. Assisted in producing accompanying document report and maps.

**Alpine Vegetation-Fire Break Analysis, City of Alpine, CA/FEMA** - Vegetation community mapping and creating a list of the plant species within the study area. Assisted in producing accompanying document report.

**San Marcos Vegetation-Fire Break Analysis, City of Chula Vista, CA/FEMA** - Vegetation community mapping and creating a list of the plant species within the study area.

**Chula Vista Vegetation-Fire Break Analysis, City of San Marcos, CA/FEMA**  
 - Vegetation community mapping and creating a list of the plant species within the study area. Assisted in producing accompanying document report.

**Duke Energy South Bay LLC, Chula Vista, CA** - Responsibilities included identifying and mapping the vegetation habitat types within the study area and any plant species of special management concern. Also conducted jurisdictional waters delineation and assisted with rare bird surveys of Least Bell's Vireo. Assisted in producing accompanying maps and document reports.

**Caltrans, State Route 52, San Diego, CA** - Responsibilities included identifying and mapping all vegetation habitat types within the study area along State Route 52, between Highways 805 and 125, and coordinating field work for visiting colleagues. Produced vegetation, rare plant, and wetland maps. Also conducted jurisdictional waters delineation. Wrote accompanying document reports. Assisted with rare bird surveys of Least Bell's Vireo.

**Caltrans, State Route 11, Chula Vista, CA** - Vegetation surveys, mapping locations of rare plants within the study area of the Otay Mesa area near the San Ysidro border crossing region, and coordinating field work with subconsultants. Worked with GIS group to produce vegetation and rare plant maps and wrote document report for client.

**Parcel A Skeet Range, Flat Rock Land Company, Chula Vista, CA** - Vegetation community mapping and creating a list of all plant species within the study area; rare plant surveys and mapped existing locations of rare plants. Produced accompanying document report and maps.

**Enpex/MCAS Miramar, San Diego, CA** - Vegetation community mapping within the study area and identification of plant species of special management concern.

**Parcel D Proctor Valley, Otay Land Co., Jamul/Chula Vista, CA** - Vegetation community mapping and creating a list of plant species within the study area. Also conducted rare plant surveys and mapped existing locations of rare plants.

Professional Associations





## Jean Paul Charpentier

*Environmental Planner/Biologist*

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### Overview

Mr. Charpentier is the biologist/environmental planner in the Environmental Planning Group, URS Corporation. His professional experience includes serving as project manager, field manager, and field technician for regulatory biology and environmental compliance projects. He has coordinated endangered species surveys, habitat assessments, biological assessments, environmental assessments, native plant preservation plans, and noxious weed surveys. Projects he has managed include endangered species surveys for cactus ferruginous pygmy owls, Pima pineapple cactus, and southwestern willow flycatcher, among others; native plant preservation inventories for the City of Tucson, Pima County, and Arizona Department of Transportation; biological assessments for transportation, utility infrastructure, disaster mitigation, surface mining, and residential/commercial development; environmental assessments for flood control, utility infrastructure, and transportation. His field technician experience includes surveys and inventories for endangered species (southwestern willow flycatcher, yellow-billed cuckoo, cactus ferruginous pygmy owl, Pima pineapple cactus, Sonoran desert tortoise, flat-tailed horned lizard, Hualapai milkwort, red-cockaded woodpecker, longfin dace, Gila chub, Chihuahua leopard frog, and others); habitat evaluations for endangered species, plant inventories for native plant preservation plans; RI/FS studies for surface mining; riparian habitat evaluations, inventories, and monitoring; and noxious weed surveys..

### Areas of Expertise

- Endangered Species Surveys and Compliance
- ESA Regulatory Compliance
- NEPA Compliance
- Section 404 Permitting
- Native Plants & Noxious Weed Surveys
- Jurisdictional Waters Delineation

### Years of Experience

8 total years (3 years with URS / 5 years with others)

### Education

MS/ Wildlife Ecology/ University of Arizona

BA / Psychology / University of Rhode Island

### Registration/Certification

Year / Registration or Certification / State (abbr.) / Registration Number

### Project Specific Experience

#### Endangered Species Surveys & Habitat Evaluations

##### **Project Manager, Pima County Flood Control District, Cactus Ferruginous Pygmy-Owl Protocol Surveys. 2007**

Project manager for cactus ferruginous pygmy-owl surveys conducted for the Pima County Flood Control District. A total of six surveys were conducted during the winter and spring of 2007.

##### **Project Manager, Pima County Department of Transportation, Cactus Ferruginous Pygmy-Owl Protocol Surveys. 2006**

Project manager for cactus ferruginous pygmy-owl surveys conducted for the Pima County Flood Control District. A total of eight surveys were conducted during the winter and spring of 2006.

##### **Project Manager, Federal Emergency Management Agency, Southwest Willow Flycatcher Protocol Surveys. 2006**

Project manager for southwestern willow flycatcher surveys conducted for the Federal Emergency Management Agency. A total of two surveys were conducted along the Gila River near Safford, Arizona in the summer of 2006.

##### **Project Manager, Pima County Department of Transportation, Cactus Ferruginous Pygmy-Owl Protocol Surveys. 2005**



Project manager for cactus ferruginous pygmy-owl surveys conducted for the Pima County Flood Control District. A total of eight surveys were conducted during the winter and spring of 2005.

**Project Manager, Pima County Department of Transportation, Cactus Ferruginous Pygmy-Owl Protocol Surveys. 2004**

Project manager for cactus ferruginous pygmy-owl surveys conducted for the Pima County Flood Control District. A total of four surveys were conducted during the winter and spring of 2004.

**Assistant Project Manager, Pima County Flood Control District, Longfin Dace Surveys. 2004**

Assistant project manager for longfin dace surveys conducted for the Pima County Flood Control District. Surveys were conducted along the San Pedro River in the summer of 2004.

**Project Manager, Pima County Department of Transportation, Cactus Ferruginous Pygmy-Owl Protocol Surveys. 2003**

Project manager for cactus ferruginous pygmy-owl surveys conducted for the Pima County Flood Control District. A total of four surveys were conducted during the winter and spring of 2003.

**Assistant Project Manager, Santa Cruz County Flood Control District, Southwestern Willow Flycatcher Habitat Evaluation and Protocol Surveys. 2003**

Assistant project manager for southwestern willow flycatcher habitat evaluation and protocol surveys conducted for the Santa Cruz County Flood Control District. Habitat evaluation and surveys were conducted along the Nogales Wash near Nogales, Arizona in the spring and summer of 2003.

**Assistant Project Manager, Santa Cruz County Flood Control District, Pima Pineapple Cactus Habitat Evaluation and Protocol Surveys. 2003**

Assistant project manager for Pima pineapple cactus habitat evaluation and surveys for the Santa Cruz County Flood Control District. Habitat evaluation and surveys were conducted in three locations in Santa Cruz County as part of flood control improvement projects in the spring and summer of 2003.

**Assistant Project Manager, ASARCO Inc. Mission Mine, Cactus Ferruginous Pygmy-Owl Habitat Evaluation and Protocol Surveys. 2002**

Assistant project manager for cactus ferruginous pygmy-owl habitat evaluation and protocol surveys conducted for ASARCO Inc. at the Mission Mine near Green Valley, Arizona. A total of two surveys were conducted during the winter and spring of 2002.

**Assistant Project Manager, ASARCO Inc. Mission Mine, Pima Pineapple Cactus Habitat Evaluation and Protocol Surveys. 2002**

Assistant project manager for Pima pineapple cactus habitat evaluation and protocol surveys for the Santa Cruz County Flood Control District. conducted for ASARCO Inc. at the Mission Mine near Green Valley,

## Training

Survey Methodology for the  
Chiricahua Leopard Frog 2006  
(US Fish and Wildlife Service)  
Biological Assessment Workshop,  
2006 (US Fish and Wildlife  
Service)  
Wetland Delineation Workshop,  
2005 (Wetland Training Institute)  
Clean Water Act: Section 404  
Workshop, 2001 (Jones and  
Stokes)  
Survey Methodology for the  
Southwestern Willow Flycatcher,  
2000 (Arizona Game and Fish  
Department)  
Survey Methodology for the Cactus  
Ferruginous Pygmy-owl, 2000  
(US Fish and Wildlife Service)

## Years of Experience

8 total years (3 years with URS / 5  
years with others)

## Education

MS/ Wildlife Ecology/ University  
of Arizona

Arizona. Habitat evaluation and surveys were conducted during the winter and spring of 2002.

### **Field Technician, Molycorp Mining Inc. Remediation Investigation/Feasibility Study. 2002**

Field technician conducting base line data studies for a mine closing in Red Rock, New Mexico. Conducted small mammal trapping and lab studies of rodents for heavy metals in animal tissues. Studies were conducted in the summer and fall of 2002.

### **Assistant Project Manager, ASARCO Inc. Mission Mine, Cactus Ferruginous Pygmy-Owl Habitat Evaluation and Protocol Surveys. 2001**

Assistant project manager for cactus ferruginous pygmy-owl habitat evaluation and protocol surveys conducted for ASARCO Inc. at the Mission Mine near Green Valley, Arizona. A total of two surveys were conducted during the winter and spring of 2001.

### **Assistant Project Manager, ASARCO Inc. Mission Mine, Pima Pineapple Cactus Habitat Evaluation and Protocol Surveys. 2001**

Assistant project manager for Pima pineapple cactus habitat evaluation and protocol surveys for the Santa Cruz County Flood Control District. conducted for ASARCO Inc. at the Mission Mine near Green Valley, Arizona. Habitat evaluation and surveys were conducted during the winter and spring of 2001.

Project manager for the Price RMP/FEIS included revising the DEIS, and incorporation of comments contained in the 68,000 public responses. Ms. Watson was responsible for providing support to BLM in conducting briefings with cooperating agencies and the public

Completed southwestern willow flycatcher survey training and conducted several presence/absence surveys. Survey history includes project clearance surveys for Phelps Dodge on the Gila River and Mineral Spring in Arizona, Arizona Public Service on the Hassayampa River (Arizona), U.S. Forest Service on the Verde River (Arizona), and Tucson Electric Power near the Santa Cruz River (Arizona).

*Yellow-billed Cuckoo.* Completed presence/absence surveys for Phelps Dodge at Mineral Spring near Kerney, Arizona.

## **Biological Evaluation & Assessments**

ecological monitoring project for the Pima County Flood Control District at Cortaro Bosque in the Santa Cruz River floodplain. The project began with a literature review to determine potential conditions at the site. A monitoring protocol then was created and data was collected to assess the present status and future changes in the vegetation and avian communities. Photographic documentation was provided for the study site. The surveys are designed to be statistically valid and replicable over time. Data from these multi year studies will seek to correlate the changes in diversity of the plant communities with avian population diversity.



*Town of Cave Creek.* Conducted a qualitative habitat evaluation for the Spur Cross Recreation and Conservation Area. Identified biological resources, mapped vegetation communities, and assessed the function of ecological systems. Developed management strategy for biological resources

*Granite Construction Inc.* Completed biological site reviews for a granite mine expansion in Tucson, Arizona. Identified potential issues with threatened, endangered or sensitive species of plants and wildlife if the facility were to be built on the proposed location.

*Pima County Department of Transportation.* Completed biological site reviews on parcels identified for a proposed bike lane along a heavily utilized roadway in Tucson, Arizona. Mapped vegetation communities in the project area and evaluated the habitat suitability for special interest plant and animal species, including threatened, endangered and sensitive status species.

*Arizona Department of Transportation.* Completed a biological site review for a road-widening project on Madera Canyon Road in the Santa Rita Experimental Range, Sahuarita, Arizona. Identified plants, designated critical habitat, wetlands, riparian habitats, wildlife, and vegetation.

*ASARCO Inc.* Completed biological monitoring on riparian habitat areas designated as mitigation sites at the PZ Range in Pinal County, Arizona. Identified vegetation species present and documented changes from previous monitoring years.

#### **Native Plant Preservation Inventories & Mitigation Plans**

*LEVEL 3.* Completed native plant preservation inventory for the installation of a fiber optic line under the Arizona Native Plant Law and Pima County Native Plant Preservation Ordinance. Coordinated inventory and submitted mitigation plans to the Arizona Department of Agriculture and Pima County Planning Department.

- *Tucson Water.* Completed native plant preservation inventory for construction of a water transmission main under the Pima County Native Plant Preservation Ordinance and City of Tucson Native Plant Preservation Ordinance. Coordinated inventory and submitted mitigation plans to the Pima County Planning Department and the City of Tucson Development Services.

#### **Noxious Weed Inventories & Mitigation Plans**

*City of Tucson.* Completed noxious weed surveys for several road resurfacing and widening project in Tucson, Arizona. Coordinated inventory and submitted survey results and mitigation plan to the Arizona Department of Agriculture.

#### **Jurisdictional Waters Delineation & Section 404 Permitting**

- *ASACRO Inc.* Completed jurisdictional water delineation at the Kearney Mine Complex. Inventories wash crossings for flow regime, geomorphic features, and indicators of presence of water. Coordinated delineation and submitted survey report to the U.S. Army Corps of Engineers.

*Arizona Public Service.* Completed jurisdictional water delineation for an electric transmission line crossing of the Hassayampa River near



Wickenburg, Arizona. Inventories wash crossings for flow regime, geomorphic features, and indicators of presence of water. Coordinated delineation and submitted survey report to the U.S. Army Corps of Engineers.

#### **BLM Natural Resource Planning**

- *BLM Phoenix South & Sonoran Desert National Monument Resource Management Plan.* Complete all necessary steps to complete a Resource Management Plan related to vegetation and wildlife resources for the Phoenix Arizona Field Office and Sonoran Desert National Monument. Efforts included review of management decision, analysis of resource condition, and development of management goals and objectives.

*BLM Ironwood Forest National Monument Resource Management Plan.* Complete all necessary steps to complete a Resource Management Plan related to vegetation and wildlife resources for the Ironwood Forest National Forest. Efforts included review of management decision, analysis of resource condition, and development of management goals and objectives.

#### **Professional Societies/Affiliates**

Full name of professional societies of which you are a member.

#### **Awards**

Year / Award Name / Awarded By

Year / Award Name / Awarded By

#### **Quotations**

N/A

#### **Languages**

English

Languages (and level of fluency, if applicable)

#### **Specialized Training**

Survey Methodology for the Southwestern Willow Flycatcher, 2000 (Arizona Game and Fish Department)

Survey Methodology for the Cactus Ferruginous Pygmy-owl, 2000 (US Fish and Wildlife Service)

Survey Methodology for the Chiricahua Leopard Frog 2006 (US Fish and Wildlife Service)

Biological Assessment Workshop, 2006 (US Fish and Wildlife Service)

Clean Water Act: Section 404 Workshop, 2001 (Jones and Stokes)

Wetland Delineation Workshop, 2005 (Wetland Training Institute)

#### **Security Clearance**

Security Clearance (if inactive, please mention)



## **Publications**

- “Article Name,” (coauthors, if any), *Publication*, Vol. #, Month and Year
- “Presentation,” (coauthors, if any), Agency Hosting Presentation, *Publication (if any)*, Vol. # (if any), Month Day, Year

## **Chronology**

MM/YY – Present: URS Corporation, Tucson, Arizona

MM/YY – MM/YY: Company Name, Location

MM/YY – MM/YY: Company Name, Location

## **Contact Information**

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## Bridget Canty

*Senior Ecologist*

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### Education

Graduate coursework/2004-2006/Environmental Science and Resources/Portland State University

BS/1991/Biology/Lewis & Clark College

### Training

Biological Assessment Preparation for Transportation Projects/2006/Washington Department of Transportation/Lacey, WA

Advanced Biological Assessment Training/2005/ Washington Department of Transportation/Tacoma, WA

Washington Ground Squirrel Survey Protocol Training/2001/ Oregon Department of Fish and Wildlife/Boardman, OR

Northwest Salamander Identification Workshop/1998/Society for Northwest Vertebrate Biology/Ashland, OR

Wetland Delineation Training/1997/Wetland Training Institute/Kent, WA

### Areas of Expertise

ESA compliance and permitting

Threatened & endangered species

Natural resource inventory, evaluation and monitoring

Impact assessment, mitigation & monitoring

Landscape level studies

NEPA, SEPA documentation

### Years of Experience

With URS: 7.5 Years

With Other Firms: 6 Years

### Overview

Ms. Canty is an ecologist and project manager with over 13 years experience in the areas of natural resource assessment, ESA compliance and permitting, NEPA documentation, surveying threatened, endangered and sensitive species, designing mitigation plans, and preparing energy facility siting documentation. Ms. Canty is certified to prepare Biological Assessments for formal and informal consultation with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service on behalf of the Washington Department of Transportation.

### Project Specific Experience

#### Energy & Utilities

**Project Ecologist, Bradwood Landing Liquefied Natural Gas Terminal and Pipeline, Northern Star Natural Gas, Bradwood, OR, 2006-Present:** Planned and conducted terrestrial biology investigation for liquefied natural gas terminal and 16-mile bi-state pipeline. Prepared FERC documentation. Defined and mapped Oregon wildlife habitats in accordance with ODFW Wildlife Habitat Mitigation Policy. Worked with client and regulatory agencies to develop mitigation for potential impacts to Oregon wildlife habitats. Co-authored Biological Assessment for Section 7 ESA consultation with USFWS and NMFS for Columbia white-tailed deer, Oregon spotted frog, eight bird species, Oregon silverspot butterfly, three plants, four salmon species, steelhead trout, bull trout, three sea turtles, and eight marine mammals. Worked with client and regulatory agencies to develop mitigation for potential impacts to Columbian white-tailed deer.

**Project Ecologist, Union Critical Issues Analysis, Clipper Wind, Morrow County, OR, 2007:** Analyzed proposed wind farm site for critical biological issues including state and federal special status species and critical habitat. Identified permitting issues.

**Project Ecologist, Pearl Phase II Pipeline Certificate Amendment, NW Natural, Columbia County, OR, 2007:** Conducted a field reconnaissance to determine existing habitat conditions and potential impacts to listed and sensitive species associated with augmentation of an existing pipeline near Mist, Oregon. An Environmental Resources Report, summarizing the results of the investigation, was prepared for submittal to the Oregon Department of Energy.

**Project Manager, Calico Meteorological Tower Monitoring, Horizon Wind, Barstow, CA, 2007:** Planned monitoring study for desert tortoise in accordance with USFWS permit and protocol.

**Staff Biologist, Solar I Biological Field Investigation, Barstow, CA, 2007:** Conducted field surveys for federally protected desert tortoise; mapped potential wetland features and vegetation coverage.



**Project Ecologist, Warner Mountains Meteorological Towers, Horizon Wind, Modoc County, CA, 2006:** Planned and conducted terrestrial biology investigation for proposed installation of meteorological towers.

**Project Ecologist, Diamond Mountains Meteorological Towers, Horizon Wind, Plumas and Lassen counties, CA, 2006:** Planned and conducted terrestrial biology investigation for proposed installation of meteorological towers.

**Project Manager, South Mist Natural Gas Pipeline Extension Phase 4/5, NW Natural, Willamette Valley, OR, 2000-Present:** Pre- and post-construction monitoring of 62-mile natural gas pipeline spanning Clackamas, Marion and Washington counties. Task leader for investigation of natural resource impacts including wetlands, habitat and State and Federally protected species. Required EFSC site certificate application and mitigation plans.

**Project Ecologist, Cotterel Mountain Wind Project Raptor Surveys, Windland, Burley, ID, 2002-2003:** Developed avian point-count survey protocol, set up 600-meter wide survey plots, and trained observers.

**Project Ecologist, White paper addressing wind power permitting and the ESA, Puget Sound Energy, WA, 2004:** Assisted with preparation of a white paper that addressed energy facility permitting in light of species protected under the federal ESA including the bald eagle.

**Task Leader, Condon Wind Project, SeaWest Windpower, Condon, OR, 2000-2001:** Natural resources investigation and technical report addressing potential impacts to large birds, including eagles, hawks, falcons, and owls.

**Task Leader, Pendleton Wind Project, SeaWest Windpower, Reith, OR, 2001:** Natural resources investigation of special status species including the Washington ground squirrel, ferruginous hawk, long-billed curlew, and burrowing owl. Prepared technical report addressing potential impacts to large birds.

**Task Leader, Stateline Wind Project, FPL Energy, Touchet, OR & Walla Walla, WA, 2000-2001:** Task leader for natural resources investigation and technical report addressing potential impacts to large birds.

**Project Biologist, Umatilla Generating Plant, PG&E, Umatilla, OR, 2001-2003:** Conducted surveys of State and Federally protected plants and wildlife, assisted with preparation of EFSC site certificate application exhibits.

**Project Biologist, Coyote Springs II, Avista, Port of Morrow, OR, 2002:** Conducted environmental monitoring following a release of mineral oil. Assisted with preparation of spill response document.

**Project Ecologist, Fernhill Wetlands Mitigation Bank Biological Assessment, Clean Water Services, OR, 2001:** Conducted after-the-fact formal agency consultation for bald eagles nesting within developing mitigation bank. Prepared biological assessment addressing habitat management and mitigation.

**State & Federal**

**Project Ecologist, City of Bonners Ferry Biological Assessment, FEMA, Bonners Ferry, WA, 2007:** Prepared BA for formal Section 7 consultation with USFWS for Kootenai River white sturgeon, bull trout and bald eagle.

**Project Ecologist, Benicia State Recreation Area Biological Assessment, FEMA, Benicia, CA, 2007-Present:** Prepared BAs for formal Section 7 consultation with USFWS for delta smelt and tidewater goby and for consultation with NMFS on five listed fish runs.

**Project Ecologist, Klamath Boat Ramp Biological Assessment, FEMA, Klamath, CA, 2006-Present:** Prepared BA for formal Section 7 consultation with NMFS for Southern Oregon/Northern California Coasts coho and Steller sea lion.. Worked with subgrantee to modify project description to avoid adverse effects to marine species.

**Project Ecologist, Crescent City Seawall Biological Assessment, FEMA, Crescent City, CA, 2006-Present:** Prepared BA for formal Section 7 consultation with NMFS for Southern Oregon/Northern California Coasts coho and Steller sea lion.

**Project Ecologist, Grider Creek Road Biological Assessment, FEMA, Siskiyou County, CA, 2006:** Prepared BA for formal Section 7 consultation with NMFS for Southern Oregon/Northern California Coasts coho.

**Project Ecologist, Grider Creek Road No Effect Letter, FEMA, Siskiyou County, CA, 2006:** Prepared No Effect letter for informal Section 7 consultation with USFWS for bald eagle and northern spotted owl.

**Project Ecologist, China Grade Road LAA Letter, FEMA, Siskiyou County, CA, 2006:** Prepared Likely to Adversely Affect letter for informal Section 7 consultation with USFWS for bald eagle and northern spotted owl.

**Project Manager, Northeast Lands Inventory, BLM, Ferry, Spokane and Pend O'reille Counties, WA, 2001-2003:** Coordination of up to four 2-person survey crews for surveys of Federally protected rare, threatened, and endangered species and timber conditions on approximately 20,000 acres of BLM land.

**Project Ecologist, Programmatic Environmental Assessments, NMFS, Portland, OR, 2002-2003:** Writing and editing Environmental Assessments (EAs) for the implementation of the ESA 4(d) Rule governing take of 14 Threatened Salmon and Steelhead ESUs.

**Seasonal Biologist, Sensitive Species Surveys, Weyerhaeuser, Western WA, 1998:** Conducted marbled murrelet habitat suitability analysis of commercial timber stands. Planned and conducted surveys of marbled murrelets.

**Research Assistant, Effects of Military Training on Shrub-Steppe Raptors in Idaho's Birds of Prey Natural Conservation Area, Department of Defense, ID, 1993:** Conducted radio telemetry surveys of golden eagles. Conducted telemetry and nest success investigation of prairie falcons. Assisted with captive breeding of American crows and common ravens in support of project to breed the endangered Hawaiian crow.

**Research Assistant, Siuslaw District Marbled Murrelet Surveys, Oregon Cooperative Wildlife Research Unit, OR, 1992:** Planned and conducted surveys of marbled murrelets in timber stands proposed for sale.

**Research Assistant, Spotted Owl Habitat Investigation, Oregon Cooperative Wildlife Research Unit, OR, 1990:** Conducted summer investigation of northern spotted owl habitat characteristics for a graduate student.

#### **Transportation**

**Project Ecologist, Spencer Creek Bridge Replacement, ODOT, Newport, OR, 2001-2006:** Planned and conducted terrestrial ecology studies. Ms. Canty identified marbled murrelet occurrence within the project vicinity. Co-authored Biological Assessment for Section 7 consultation with USFWS with conservation measures designed to protect the murrelet without affecting the project construction schedule.

**Project Ecologist, South Corridor Transportation Corridor EIS, Metro, OR, 2002-2003:** Conducted habitat assessment studies, authored technical reports in support of NEPA DEIS, identified mitigation opportunities.

**Task Manager, West Eugene Parkway System-Wide Wetland Impacts Analysis, ODOT, OR, 2003-2005:** System-wide wetland impacts analysis of proposed West Eugene Parkway.

**Task Manager, Fern Valley Interchange, ODOT, Phoenix, OR, 2003:** Terrestrial ecology studies.

**Task Manager, Bear Creek/Zigzag Bridge Restoration, ODOT, ZigZag, OR, 2003:** Large mammal crossing study; primary author Biological Evaluation.

**Task Manager, Newberg-Dundee TIP, ODOT, Newberg/Dundee, OR, 2001-Present:** Terrestrial ecology studies.

**Task Manager, Highway 26 TIP, ODOT, Beaverton, OR, 2001-Present:** Terrestrial ecology studies.



**Task Manager, Central Oregon Highway Bridges, ODOT, Burns, OR, 2003:** Terrestrial ecology and wetland studies.

**Project Biologist, Sioux Falls Airport Wildlife Study, Sioux Falls Regional Airport, Sioux Falls, SD, 1999:** Conducted investigation of wildlife occurrence and habitat use, assisted with development of wildlife hazard minimization strategy.

#### **Ports**

**Project Manager, Columbia Gateway SEPA DEIS Supplemental Studies, Port of Vancouver, WA, 2003-Present:** Field investigations of bald eagles, Canada geese, sandhill cranes, and great blue herons. Included development of study protocols, assistance with database development, and documentation. Supplemental studies were initiated following comments received during the public review of the DEIS.

#### **Professional Societies/Affiliates**

Ecological Society of America

#### **Chronology**

2000-Present: URS Corporation

2000: Pacific Habitat Services

1998-1999: PBS Environmental

1998-2000: Beak Consultants

1997-1998: City of Portland BES

1993: Greenfalk Consultants

1990-1992: Oregon Cooperative Wildlife Research Unit

#### **Contact Information**

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## Corey D. Chan

*Environmental Scientist*

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### Overview

Mr. Chan's education and experience have provided him with a diverse background in environmental science. He has extensive field experience on marine, freshwater, and terrestrial projects, including monitoring, restoration, and data collection and management.

### Project Specific Experience

#### Current Employment

**Desert Tortoise Survey, Barstow, CA., 2007.** Surveyed for Desert Tortoise for placement of panels and transmission lines for solar project.

**Blunt-nosed Leopard Lizard Survey, Carrizo Plains, CA., 2007.** Performed protocol survey to assess habitat quality for Blunt-Nosed Leopard Lizard.

**Restoration Monitoring/Seed Collection, Santa Barbara, CA., 2007.** Collection of native plant seeds and restoration monitoring of seeded and planted wetland, upland, and riparian habitats at the Santa Barbara Airport and Ellwood Grasslands.

**Casitas Resource Management Plan (CEQA/NEPA), Ventura, CA., 2007.** Preparation and analysis of existing conditions and impacts/mitigation for geology, hazardous materials, and visitor access and circulation sections.

**Ecorisk Assessment, Santa Barbara, CA., 2007.** Collected and prepared tissue samples for ecorisk assessment for soil and groundwater remediation project.

**Tidewater Goby and Fish Relocation, Santa Barbara, CA., 2007.** Captured and relocated tidewater gobies and other fish species from Tecolotito and Carneros Creeks, Santa Barbara.

**Soil Stockpile Removal, Santa Maria, CA., 2007.** Construction monitoring and waste manifest documentation for contaminated soil removal.

**Site Assessment, Santa Barbara, CA., 2007.** Presentation, data consolidation, and analysis of water and soil samples for Site Investigation and Remedial Action Plan Reports.

**Project Administration, Santa Maria, CA., 2007.** Preparation of health and safety plan and coordination with subcontractors for remediation work on ConocoPhillips sump site.

### Years of Experience

With URS: <1 Year

With Other Firms: 4 Years

### Education

MS/Environmental Science and Management/2005/University of California, Santa Barbara

BS/General Biology/2000/University of California, San Diego



### **Previous Employment**

**WELDesign, Santa Barbara, CA., Environmental Restoration and Landscaping, December 2005-August 2006.** Planted native plants, installed irrigation, and monitored at residential and restoration sites. Worked using sustainable, environmentally-friendly practices and methods.

**Ecotrust, Portland, OR., Field Staff Coordinator, June 2005-November 2005.** Interviewed commercial fishermen along California's Central Coast as part of marine reserve socioeconomic mapping project. Coordinated with field staff and fishing community contacts.

**United States Forest Service, Santa Barbara, CA., Aquatic Biologist, June 2004-September 2004.** Sampled stream sites for aquatic macroinvertebrates and habitat characteristics throughout the Los Padres National Forest. Compiled and analyzed collected data for use in forest management.

**Department of Fish and Game, San Diego, CA., Scientific Aide, January 2001-September 2003.** Assisted with drafting a management plan for market squid and white seabass fisheries. Observed and assessed bycatch in commercial spot prawn fishery.

**Scripps Institution of Oceanography, UCSD, La Jolla, CA., Biological Intern and Laboratory/Research Assistant, July 1999-September 2003.** Completed SCUBA dive surveys of the Point Loma kelp forest ecosystem. Tracked shortfin mako sharks using acoustic telemetry. Collected and transported live mako sharks and Pacific bonitos for respirometry experiments. Performed spectrophotometric analyses and blood sampling. Quantified El Niño effects on the fecundity and growth of a kelp isopod.

### **Professional Societies/Affiliates**

- Goleta Stream Team, Santa Barbara Channelkeeper
- Santa Barbara County Certified Green Gardener

### **Specialized Training**

- 2007/40-hr Haz Mat General Site Worker
- 2007/Loss Prevention System Health and Safety Training
- 2007/Smith Driver's Training
- 2007/Waste Manifest Training

### **Contact Information**

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## Bill Craig

*Environmental Scientist*

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### Areas of Expertise

NEPA Compliance  
NPDES Permitting  
Surface and Groundwater Studies  
Project Management  
Site Management  
Contaminated Sites Investigations and Remediation

### Years of Experience

With URS: 6 Years  
With Other Firms: 10 Years

### Education

B.S., Environmental Studies, State  
University of New York, College of  
Environmental Science & Forestry,  
1990

### Registration/Certification

Certified Hazardous Materials  
Manager No. 09598  
USACE Construction Quality  
Management for Contractors  
OSHA 10-hour Construction Safety  
and Health  
HAZWOPER 40-hour OSHA Training  
North Slope Training Class

### Overview

Mr. Craig is an environmental scientist with 16 years experience. His expertise includes preparing environmental impact statements, NPDES permitting, and conducting surface and groundwater studies. Mr. Craig has a proven record of managing subcontractors and specialists from multiple offices to complete complex projects. He efficiently utilizes company resources such as GIS, Comment Analysis Database, Web-based Admin Record, and Project Management systems to complete complex projects on time and within budget. Mr. Craig has extensive field experience including experience at remote Alaska locations and in Alaska's commercial salmon fisheries. He has led a variety of office and field projects and has an excellent safety record. Following is a list of representative experience.

### Project Specific Experience

**Alaska Railroad Corporation, Fort Wainwright Rail Realignment, Environmental Assessment and Project Permits, Deputy Project Manager and Author:** Responsible for completion of the environmental assessment and permit applications for five miles of new rail. The realigned rail would impact wetlands, require a new river crossing, and affect existing land uses. Permit applications will include Corps Section 10/404, US Coast Guard Bridge, and Title 41 (fish streams).

**United States Army Corps of Engineers, Asphalt Disposal Area Wetlands Restoration, Kodiak Island, Alaska.** Prepared the wetlands restoration plan for the area impacted by removal of 40,000 cubic yards of asphalt and POL contaminated material. Plan presented planned grade elevations, water depths, and plant species. The wetland was successfully restored.

**Confidential Client, Phase 1 Environmental Assessment for Proposed Mine, Deputy Project Manager.** Responsible for assisting the URS project manager preparing an environmental assessment for a company interested in investing in a new mining project. Project deliverables included a Phase 1 report and a semi-quantitative risk assessment. Key resources of concern include fish, wildlife, and water quality.

**Bureau of Indian Affairs, Cordova Oil Spill Response Facility Environmental Impact Statement, Cordova, Alaska, Deputy Project Manager.** Responsible for managing, under the direction of Jon Isaacs, preparation of the environmental impact statement and permit applications, including Corps Section 10/404 permit applications, for construction of a deepwater dock and 4.5 miles of new road. The project utilized staff from seven URS offices and four subcontractors to complete the conceptual design of the proposed project and three build alternatives, describe the affected environment, and predict environmental consequences.





**Federal Highway Administration Knik Arm Crossing Environmental Impact Statement, Author.** Responsible for inventorying contaminated sites for the Knik Arm Crossing EIS. Prepared an Initial Site Assessment technical report and summary sections for the EIS.

**Former Chevron Refinery, NPDES Permit Application, Nikiski, Alaska, Senior Review and Technical Consultant.** Advised in-house task manager preparing an NPDES permit application for discharge of effluent from a groundwater recovery system. Effluent is discharged to Cook Inlet. Performed senior review and assisted with minor revisions from client legal review.

**Alaska Railroad Corporation, Anchorage to Eagle River Line Change, Environmental Site Officer:** Responsible for ensuring compliance with environmental permits such as NPDES storm water, Section 404, and SPCC. Mr. Craig represents ARRC and works with contractors to ensure that Best Management Practices are implemented and effective at controlling pollutants.

**ExxonMobil Production Company, NPDES Permit Application and Support at Point Thomson Gas Cycling Project, Beaufort Sea, Alaska, Task Manager.** Mr. Craig prepared a draft NPDES permit application for this new proposed oil field development. Also prepared Storm Water Pollution Prevention Plans for both construction and operation of the proposed facility and Best Management Practices and Pollution Prevention Plans for construction dewatering and ice road and pad construction and use during the proposed project.

**Ketchikan Pulp Company, Ward Cove Landfill NPDES and Mixing Zone Permit Applications, Ketchikan, Alaska, Task Manager.** Responsible for preparation of an NPDES permit application to EPA and a mixing zone application to Alaska Department of Environmental Conservation. Four storm water outfalls and a new proposed outfall discharging treated landfill leachate were included in the applications. Historic sampling data were compiled, reviewed, and compared to applicable water quality standards, and EPA forms were completed and submitted. Because the treated leachate exceeded water quality standards for several pollutants, a mixing zone application was prepared to request authorization of a five meter mixing zone.

**Alaska Department of Transportation and Public Facilities, Whittier Ferry Terminal Improvements Project, Whittier, Alaska, Project Manager.** Responsible for characterizing the physical and chemical properties of proposed dredge material from deepening the existing ferry moorage. Responsible for preparing a sampling and analysis plan for regulatory approval, planning and overseeing the sediment sampling, and summarizing findings and field methods in a report.

**Ketchikan Gateway Borough, Ward Cove Sanitary Wastewater Treatment Facility NPDES Permit Application, Ketchikan, Alaska, Project Manager:** Responsible for preparation of an NPDES permit application to EPA for domestic sanitary waste and storm water. Historic sampling data were compiled, reviewed, and compared to applicable water



quality standards, and EPA forms were completed and submitted. Storm water coverage was gained under the Multi-Sector General Permit (MSGP) and a SWPPP prepared.

**BP Exploration, Reserve Pit Closure Program, Prudhoe Bay Exploration Drill Sites, Alaska, Project Manager.** Responsible for preparation of closure plans for 35 exploration drill site reserve pits on the North Slope. Conducted surface water sampling, evaluated data, and recommended closure or corrective actions and prepared closure plans.

**Ketchikan Shipyard NPDES Permit Application, Ketchikan, Alaska, Author:** Assisted with an NPDES application for a new ship lift. Wastewater flows were bilge water, ballast water, pressure wash water, and storm water.

**United States Postal Service, Spill Prevention, Control, and Countermeasures Plans, Alaska, Author.** Prepared SPCC plans for three post offices in Alaska. Identified appurtenances or items that were not in compliance with Federal Oil Pollution Prevention regulations and made recommendations for modifications.

**ExxonMobil Production Company, Ocean Dumping Evaluation, Point Thomson Gas Cycling Project, Beaufort Sea, Alaska, Field Manager.** Responsible for sediment characterization conducted to support proposed channel dredging and subsequent ocean dumping. Work was conducted from a boat in summer, using a Van Veen sediment sampler, and in winter, using Rollagons and hollow stem auger drilling advanced through sea ice. Mr. Craig also assisted in preparing the Zone of Siting Feasibility document, which presented the operationally and economically feasible areas for the proposed ocean dumping.

### EDUCATION/TRAINING

2004	Master's Degree, Ecology and Systematic Biology San Francisco State University.
1980	Bachelor's Degree, Biology University of East Anglia, UK
2000-2006	Short courses and workshops: Carex, Jepson Herbarium. Poaceae, Jepson Herbarium. Grasses, Sedges and Rushes, University of Birmingham (UK) Interpretive Design, Bucy Associates, Corvallis, OR

### PROFESSIONAL EXPERIENCE

2005-present	Independent Biologist and Writer, Portland, OR.
2003-2005	Independent Biologist, San Francisco.
2002	Biological Technician, Golden Gate National Recreation Area.
2000-2002	Independent Biologist, San Francisco and Instructor, San Francisco State University
1999	Intern at Countryside Management Services, UK; also undertook habitat restoration for National Park Service, California
1992-1999	Editor and writer, CMP Publications, San Francisco and London

Mr. Faden has over 7 years' experience performing field botanical surveys, habitat assessment and restoration in California. His primary expertise lies in the field of botany, performing surveys for special-status plants, assessing vegetation and restoring habitats. He has also performed wildlife surveys in California.

Mr. Faden has worked in and studied the botany of the California and Nevada deserts. He has performed on-site work focusing on endemic plant species for the Ash Meadows National Wildlife Refuge (USFWS) in the Amargosa Valley near Las Vegas. He has intensively studied the botany of the Mojave Desert and Basin and Range of California and Nevada during many hiking and botanical field trips.

Mr. Faden has extensive experience in project management and possesses a broad range of technical skills such as expertise in geographic information systems and databases. He has contributed effectively as project leader and team member in a variety of technical and non-technical roles, and has managed teams of up to six staff. As an editor and writer for more than eight years, he was responsible for delivering complex analytical writing projects to meet high quality standards within tight deadlines and budget constraints.

Besides possessing extensive knowledge of the flora of California, Mr. Faden is familiar with the vegetation of neighboring states, Western Europe and South America. He has a working knowledge of Spanish and French.



## Devetta A. Hill

*Senior Ecologist*

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### Overview

Ms. Hill has over 11 years of experience with ecological surveys, biological assessments, wetland delineations, stream assessments and 404 permitting and wetland/stream mitigation. Her particular areas of experience include: aquatic and terrestrial habitat surveys; floral and faunal species identification; waters of the U.S. surveys (WOUS) and wetland delineations; 404 permitting and wetland/stream mitigation; threatened and endangered species surveys and Section 7 consultation; and the preparation of baseline survey reports and biological assessment/evaluation documents. Ms. Hill has applied these skills to a wide range of projects, from transportation and mining projects to residential and commercial developments.

### Areas of Expertise

Ecological Surveys  
Wetland Delineations  
Stream Assessments  
404 Permitting  
T & E surveys  
Biological Assessments  
Section 7 Consultation

### Years of Experience

With URS: Less than 1 Year  
With Other Firms: 11 Years

### Education

MS/1993/Biology  
Morehead State University  
  
BS/1987/Biology  
Morehead State University

### Project Specific Experience

**Elkhead Reservoir, Moffat County, Colorado:** Ms. Hill assisted in conducting first year monitoring of constructed wetlands. The wetlands were created to mitigate for wetland losses that resulted from the construction of the reservoir. Monitoring consisted of determining permanent vegetation transects; determining the first year success of herbaceous vegetation; identifying problematic vegetation areas; and removing nuisance vegetation species.

**Williams Gas Pipeline, La Plata County, Colorado:** Ms. Hill prepared Jurisdictional Determination forms for submittal to the U.S. Army Corps of Engineers (Corps). These forms were based on the Corps Arid West Supplement and were used to determine the jurisdiction of streams impacted by the project. This determination resulted in the Corps issuing a Nationwide Permit 12 for this pipeline project as well as determining the amount of mitigation required.

**Temple Mountain Mine, Uintah County, Utah:** Ms. Hill conducted an ecological baseline survey for this tar sands mine operation. The survey included vegetation sampling; WOUS determinations; wildlife surveys; soil sampling; and T & E surveys. These surveys were used to determine the pre-mining baseline conditions of the mine site. All of this information was compiled into a report that will be used to create a post-mining reclamation plan.

**Mule Canyon Mine, Landers County, Nevada:** Ms. Hill conducted a WOUS survey using the Corps Arid West Supplement on a 22,000 acre gold mine. She investigated the presence of a significant nexus connection between the waterways on the mine site, a playa outside the project boundary, and the Humboldt River, a jurisdictional waterway regulated by the Corps. Ms. Hill determined a significant nexus did not exist and the WOUS features on the mine site were not regulated by the Corps.

**TG Power Geothermal Power Plant, Elko County, Nevada:** Ms. Hill conducted a lek survey to determine impacts to Sage Grouse populations

within the project area. She coordinated with the Nevada Department of Wildlife (NDOW) to determine the appropriate survey methods and was involved in discussions concerning impact potentials and appropriate mitigation measures. Ms. Hill also conducted a WOUS survey for the access road and the transmission line locations for the project.

**Turquoise Ridge Joint Venture Gold Mine, Landers County,**

**Nevada:** This project involved the expansion of the existing Turquoise Ridge Gold Mine operations. Ms. Hill led a team of biologists to survey a 40 mi<sup>2</sup> area for WOUS using the Arid West Supplement. Numerous slope wetlands, ephemeral and intermittent drainages, and significant nexus issues were identified.

**Colonel's Island Connection Track, Brunswick, Georgia:** Ms. Hill conducted ecological surveys, T&E species surveys, wetland delineations, and stream impact assessments for a 2-mile new location rail line extension track. Major issues included impacts to a high quality Carolina Bay wetland area and potential T&E habitat. Ms. Hill was responsible for coordinating with the Corps to permit the wetland impacts and determine appropriate mitigation measures. She also coordinated with the U.S. Fish and Wildlife Service (USFWS) to resolve the T&E issues. She prepared the ecology report and the Georgia Environmental Policy Act (GEPA) document (similar to a NEPA Environmental Assessment) for Georgia Department of Transportation (DOT). This project was fast tracked and Ms. Hill met all deadlines.

**KY 70, Barren County, Kentucky:** This Kentucky Transportation Cabinet project impacted sensitive karst areas within Mammoth Cave National Park and a T&E plant. Ms. Hill was responsible for leading a team of biologists in the field and laboratory analyses to characterize the existing aquatic and terrestrial ecosystems, including cave habitats, to determine potential impacts. She worked with the USFWS, the National Park Service (NPS), and the Kentucky Transportation Cabinet to avoid impacts to the federally protected plant population by relocating the population.

**Old Norcross Pump Station, Norcross, Georgia:** Ms. Hill was responsible for acquiring the Individual 404 permit for this \$2 million sewage pump station project. She delineated wetlands and determined waters of the U.S. impacts. The client proposed to mitigate impacts by creating and restoring wetlands on-site. Ms. Hill was involved with the mitigation decision making and coordinating the permitting and mitigation efforts with the Corps.

**SR 20 Road Widening Project, Cumming, Georgia:** Ms. Hill was the project leader for this 10-mile road widening project. She conducted the ecological surveys, including T&E species, and stream impact assessments to determine the project impacts. She was involved with the public information open house and preparing responses to public comments. She coordinated with the Corps and Georgia DOT to prepare the NW 14 Permit application including mitigation measures. She was involved with

preparing the Environmental Assessment NEPA document that was submitted to the Federal Highway Administration (FHWA).

**US 31E, Nelson-Spencer Counties, Kentucky:** This Kentucky Transportation Cabinet project was a 17-mile new location highway. The project impacted over 40 streams and some sensitive karst areas. Ms. Hill was responsible for managing the field work and laboratory analysis efforts to characterize both the aquatic and terrestrial ecosystems. She conducted surveys for federally protected bat and plant species. Because of the potential karst impacts, Ms. Hill led a team that surveyed caves and identified groundwater and surface water impacts. She coordinated with state and federal agencies to determine appropriate methods to avoid or minimize impacts to sensitive areas and species.

**US 60 Tennessee River Crossing, McCracken and Livingston Counties, Kentucky:** Ms. Hill managed a team of biologists to survey the ecological resources including the Tennessee River and its sensitive mussel species. She delineated large forested hardwood bottomland wetlands and assessed stream impacts. Ms. Hill coordinated with state and federal agencies to determine their concerns about the project and then worked with the Kentucky Transportation Cabinet and FHWA to find solutions.

**US 119 Pine Mountain Crossing, Letcher County, Kentucky:** This controversial transportation project had numerous environmental issues. One section of the proposed road was on new location that crossed a state wilderness area. Another new location section impacted a Nature Conservancy area. Because of the pristine nature of the new location areas, several state listed species and areas of unique habitat were identified, such as rare slope wetlands and numerous caves. Ms. Hill led a team of biologists to assess the resources to determine the alternative with the fewest impacts. She coordinated with state and federal agencies, especially the Kentucky State Nature Preserves Commission and the Nature Conservancy, to develop plans to minimize or mitigate impacts to the sensitive areas and species. Ms. Hill also represented the Kentucky Transportation Cabinet in meetings with the public to explain the environmental impacts of the project.

**Zimmerman Landfill, Clermont County, Ohio:** Ms. Hill conducted wetland delineations on a 200-acre site for the expansion of an existing landfill. This survey area had been previously disturbed resulting in created wetlands that the Corps considered atypical situations. Major challenges were determining the presence of hydric soils from compacted, unnatural soil horizons and determining the hydrology supporting the wetlands. Ms. Hill identified numerous isolated, atypical wetlands which were not under the jurisdiction of the Corps, but were regulated by the Ohio Environmental Protection Agency (EPA). She prepared the necessary documentation and assisted the client through the Ohio EPA permitting process.

**Wildflower Subdivision, Jackson County, Georgia:** Ms. Hill determined wetland and stream impacts for this residential development. She assessed the site for T&E species and potential habitats. She worked

with the client to determine the best location for the single-family homes in relation to the water resources to avoid the necessity of an Individual 404 permit.

**US 68/80, Trigg and Marshall Counties, Kentucky:** Ms. Hill conducted field surveys to determine the presence of T&E species and potential habitat for this combination road improvement/new location project. Because the project was partially located on U.S. Forest Service (USFS) managed property, Ms. Hill worked with USFS biologists to survey the areas and collect sample data. During surveys for endangered bats, federally protected gray bats were captured, which resulted in Section 7 consultation with the USFWS and the USFS. Coordinating with the Kentucky Transportation Cabinet, the USFWS, and the USFS, Ms. Hill prepared the Biological Assessment/Evaluation document which fulfilled the Section 7 obligation.



## **Professional Societies/Affiliates**

Southeast Bat Working Group  
Society of Wetland Scientists

## **Training**

MSHA Training, Elko, Nevada  
ODOT CE Training, Columbus, Ohio  
ODOT 4(f) Training, Columbus, Ohio  
Ohio Wetlands & Streams Conference, Columbus, Ohio  
Indiana Bat and Coal Mining Conference, Louisville, Kentucky  
U.S. Army Corps of Engineers Section 404 Workshop, Huntington, West Virginia  
“Colonization of Constructed Wetlands in the Daniel Boone National Forest” poster presentation at the Ecological Society of America Conference, Savannah, Georgia  
Wetland Training Institute’s Wetland Construction and Restoration, Lansing, Michigan  
38-Hour U.S. Army Corps of Engineers Wetland Delineation, Management and Field Training, Lake Norman, North Carolina.

## **Chronology**

08/2007 – Present: URS Corporation, Salt Lake City, Utah  
2/2007-8/2007: JBR Environmental Consultants, Elko, Nevada  
2/2005-2/2007: Moreland Altobelli and Associates, Norcross, Georgia  
2/2001-7/2004: Palmer Engineering, Winchester, Kentucky  
1/1997-2/2001: T.H.E. Engineers, Lexington, Kentucky  
5/1991- 1/1997: Kentucky Department for Surface Mining Reclamation and Enforcement, Frankfort, Kentucky



## Gregory Hoisington, M.S.

*Ecologist*

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### Overview

Mr. Hoisington's professional experience includes interdisciplinary projects in biological resource assessment and identification, environmental document preparation, environmental planning, compliance, permitting, and construction monitoring. Greg has led natural resource field surveys for fauna and flora species, wetlands and waters determinations, and for sensitive plant and wildlife species. Mr. Hoisington's experience includes preparation of biological and environmental documents for compliance with NEPA, CEQA, CEC, Endangered Species Acts, and other relevant legislation. Greg has also prepared permit applications and participated in informal and formal consultation with regulating agencies including CDFG, USFWS, NMFS, ACOE, and California Coastal Commission.

### Areas of Expertise

Biological resource assessment and identification; Environmental Documentation; Planning, Compliance, and Permitting

### Years of Experience

With URS: 1.5 Years

With Other Firms: 2 Years

### Education

MS, Biology, 2004, California State University, Long Beach.

BS, Ecology and Environmental Biology, 2001, California State University Long Beach.

### Project-Specific Experience

#### Anaheim Power Plant AFC, Orange County, CA.

Performed vegetation community mapping, habitat suitability analysis for rare plant and wildlife species, and initial Waters of the State, U.S., and wetlands delineations for an Application for Certification of a proposed power plant site and associated water, electrical, and natural gas line linears.

**Solar Power Plant AFC, San Luis Obispo County, CA.** Field Biologist on a survey team for an Application for Certification of an 180 MW solar/thermal generating facility located San Luis Obispo County. Performed rare plant surveys, vegetation community mapping, and initial kit fox and blunt nose leopard lizard habitat suitability assessments.

**Solar Power Plant AFC and EIS, Imperial County, CA.** Field Biologist for a 7000 acre solar/thermal generating facility. Performed protocol Flat tail horned lizard surveys, vegetation community mapping, rare plant surveys, and Waters of the US and state delineations.

**Solar Power Plant AFC and EIS, San Bernardino County, CA.** Field Biologist for a 15,000 acre solar/thermal generating facility. Performed protocol desert tortoise surveys, vegetation community mapping, rare plant surveys, and Waters of the US and state delineations.

#### Southern California Edison, Palmdale, CA.

Performed vegetation community mapping along a 43 mile transmission line proposed for upgrades. Compiled data and vegetation maps for submission to the California Public Utility Commission.

#### TransCanada and Imperial Irrigation District, Southern CA

Performed field surveys for listed flora and fauna species and



Wetlands/Waters of the U.S. along an 80-mile and separate 45-mile proposed liquefied natural gas pipeline. Authored the Biology and Hydrology sections for the Federal Energy Regulatory Commission filing, responded to data requests/comments, and resubmitted the sections for certification.

**Florida Power and Light, Blythe, CA**

Led field surveys to document CDFG jurisdictional streambeds along a 67-mile project alignment. Conducted field biological surveys to determine species composition and diversity of desert wash woodland and creosote bush scrub annuals, perennials, shrubs, and trees. Compiled and analyzed data to create resource databases (botanical, vertebrate and wetland databases) and produced graphical representations of biological data in tables and graphs. Assisted with preparation of technical impact evaluations, Biological Assessment, CDFG Streambed Alteration Permit, California Energy Commission Data Requests, and Mitigation and Monitoring plans. Performed field evaluation and permitting of U.S. waters determinations based on CDFG code 1600, and Section 404 of the Clean Water Act.

**LA Dept. of Public Works, Marina del Rey, CA.**

Performed an eelgrass, *Caulerpa* spp., and sensitive marine biological resource survey for a proposed Marina del Rey tide gate improvement project. The survey consisted of benthic mapping and surveying along 2-meter snorkel transects within an approximate 50,000 sq. ft. project area. Authored a letter report of the findings for the LADPW.

**Chevron San Ardo Crude Pipeline, Coalinga, CA.**

Performed biological monitoring for the California tiger salamander, California red-legged frog, and San Joaquin kitfox during geotechnical drilling investigations along a proposed 57-mile heated crude pipeline.

**City of Santa Monica, Santa Monica, CA.**

Performed vegetation community mapping and tree inventory along a 1.6-mile portion of Palisades Bluff proposed for slope stabilization. Data were collected for inclusion in a California Coastal Development Permit application. Drafted a report of findings and assisted with data inclusion within the CCD permit.

**Federal Emergency Management Agency (FEMA), Sonoma, Sacramento, and Napa Counties, CA**

Performed site assessments for Federally-listed flora and fauna species on four river projects. Site assessments consisted of habitat suitability and presence/absence surveys for Federally-Listed species including central California steelhead ESU, CA red-legged frog, CA Freshwater shrimp, bald eagle, and northern spotted owl. Species effects determinations were made for each site and recommendations for inclusion in a Programmatic Biological Assessment or individual Section 7 Endangered Species Act consultation with National Marine Fisheries Service and/or U.S. Fish and Wildlife Service were made. Authored Biological Assessments for two



projects for submittal in Section 7 ESA consultation.

**CalTrans, San Luis Obispo and Riverside Counties, CA**

Performed site biological assessments for common and special status plant and wildlife species for independent transportation improvement projects for US 101/McCoy Lane Interchange improvement, Redlands Boulevard improvement, Gilman Springs Road improvement, Palomar Road widening, and I215/Newport Road Interchange improvement projects. Authored all environment documents (NES-MIs) and prepared responses to comments.

**Seales Mineral Project, Tronas, CA**

Performed site reconnaissance and biological permit compliance analysis for a borax and sodium sulfate mining operation that impacts on avian species protected by state and federal ESAs, MBTA, and CDFG Code Sections 3500 and 3800 *et seq.* Presented data and fatal flaws analysis to perspective buyers of the mining operation.

**Chevron Guadalupe Restoration Project, Guadalupe, CA**

Assisted with California Red-legged Frog eyeshine surveys within an estuarine habitat along the Santa Maria River and performed construction monitoring for areas containing listed plants.

**Federal Emergency Management Agency (FEMA), Marin County, CA.**

Performed site assessments for Federally-listed Threatened or Endangered Flora and Fauna Species on 12 marine and freshwater projects within Marin County, CA. Site assessments consisted of suitability of habitat and presence/absence surveys for Federally-Listed species including central California steelhead ESU and Coho Salmon, CA red-legged frog, CA freshwater shrimp, clapper rail, and Baker's larkspur. Species effects determinations were made for each site and recommendations for inclusion in a Programmatic Biological Assessment or individual Section 7 Endangered Species Act consultation with National Marine Fisheries Service and/or U.S. Fish and Wildlife Service were made. Authored Biological Assessments for six projects requiring Section 7 ESA consultation.

**Santa Barbara Airport, Santa Barbara, CA**

Assisted in a fish identification and relocation project to relocate estuarine fishes from two intertidal wetland sites planned for runway construction disturbance to an undisturbed, adjacent wetland location. Assisted with the relocated fishes included the tidewater goby.

**County of Santa Barbara**

Assisted in the design, construction, and implementation of a central California steelhead ESU fish passage through an existing, impassible bridge barrier. Utilized natural rock formations and also engineered rock and pool formations to facilitate fish passage up an approximately 15 foot vertical gradient.

**CalTrans, Paso Robles, CA**

Performed biological survey activities to identify sensitive wildlife and plant species on land proposed for two separate transportation overpass improvement projects (US 101/SR 46 W and US 101/SR 46 E) located in Paso Robles, California. Identified required biological surveys, performed biological surveys for sensitive wildlife and botanical species, identified relevant environmental studies required for NEPA/CEQA compliance, authored relevant environmental documentation (NES-MI), and responded to comments.

**Mission College, Sylmar, CA**

Authored the Biology section of an EIR prepared for an expansion of the Los Angeles Mission College. Performed biological resource assessments for general and sensitive floral and fauna within the project area and performed Waters of the U.S. jurisdictional determinations. Responded to Client and public comments.

**CalTrans, Santa Ana, CA**

Implemented biological construction monitoring plans for the SR 22 Improvement Project. Inspected work sites for compliance with all relevant permit and construction monitoring requirements for flora, fauna and Waters of the U.S and state.

**Union Pacific Railroad, Mesquite, NV**

Completed ACOE Waters of the U.S. delineations along a proposed 32-mile railroad line extending northwest from Mesquite, NV and at a proposed coal-powered electrical generating station. Gathered GPS locations of all tributaries to Waters of the U.S. as well as length and width measurements in order to calculate disturbance acreages.

**Pacific Gas and Electric, North Baja Natural Gas Pipeline, Southern California and Western Arizona**

Led field monitoring of experimental vegetative seeding plots and bi-annual botanical surveys for revegetation along an 87 mile pipeline corridor pursuant to the CDFG Streambed Alteration Permit, USFWS BO, and the FERC and California State Lands Commission (CSLC)-approved FEIS requirements. Compiled and analyzed all data and authored bi-annual botanical reports.

**Florida Power and Light, Lancaster, CA**

Developed and implemented field methods for a special status plant survey along a 60-mile transmission line slated for an upgrade. Coordinated field efforts, led field surveys, and coordinated with regulators including CDFG and USFWS regarding field surveys.

**PPM Energy, Palm Springs, CA**

Developed and implemented field methods for protocol desert tortoise surveys and special status plant and animal surveys. Coordinated field efforts and performed sensitive species surveys on approximately 6 acres slated for wind development. Coordinated with agencies including CDFG



and USFWS.

**U.S. Air Force, Edwards Air Force Base, Lancaster, CA**

Prepared and implemented a field research plan to address predation of the desert tortoise by the common raven. Performed population density estimates of ravens, movement patterns, and nest searches for tortoise remains.

**South Coast Water District (SCWD), Laguna, CA**

Managed and prepared three draft CEQA initial studies for the installation of a new water line, the replacement of an existing water line, and for the maintenance of two sanitary sewer lines in Laguna Beach, California. Duties included project management, client relations, identification of required biological and cultural surveys, planning biological sampling events, identifying required environmental permits, and identifying relevant technical environmental studies required for CEQA compliance. Developed general species lists, developed and implemented special status plant surveys for rare species. Coordinated contractors performing cultural and special status bird surveys.

**Arctic Slope Regional Corporation (ASRC Lynx, Inc), Alaska**

Performed marine mammal monitoring surveys for shipping operations associated with oil exploration activities along the north slope of Alaska in the Arctic Ocean. Documented all observed mammals in accordance with the conditions stipulated by the NOAA Incidental Harassment Authority Permit under the Marine Mammal Protection Act.

**Calpine Energy, Riverside, CA**

Prepared a biological resources mitigation implementation and monitoring plan (BRMIMP) as well as a worker environmental awareness plan (WEAP). Assisted with biological resource monitoring for construction activities associated with an Electric Generating Facility installation. Performed construction monitoring for sensitive biological resources.

**PPM Energy, Inc., Jucumba, San Diego County, CA**

Performed site feasibility surveys and flora/fauna sampling activities to identify common and sensitive wildlife and plant species on BLM-administered land proposed for a wind-energy development project. Identified required biological surveys, planned biological sampling events, identified requisite permitting sequence and scheduling, identified potential stakeholders, and identified relevant environmental studies required for NEPA/CEQA compliance. Developed avian field sampling protocols including point count observation areas and coverage, and completed avian data collection at all project observation locations every two weeks for one year.

**Hunter's Point Naval Station, San Francisco, CA**

Performed burrowing owl protocol surveys and vegetation composition mapping on 176 acres within the Hunter's Point Navy Base. Performed passive Burrowing Owl relocation methodology in order to relocate the



sensitive species from within the project construction area. Performed vegetation identification for dominant species suspected of radioactive isotopic uptake in order to clear the vegetation for remediation activities.

#### **Cal Trans, Hesperia CA**

Led a site evaluation and natural resources field survey of an approximately 20 acre undeveloped open space parcel in the city of Hesperia, San Bernardino County, California for a I-15 and Ranchero Road Interchange Preliminary Environmental Analyses. Determined potential environmental development regulatory and compliance issues of this study site relative to biology and jurisdictional waters of the United States. Identified vegetation coverage, wildlife present, and potential waters of the United States. Compiled and mapped GPS data of vegetation coverage and water features. Authored the biology section of the Preliminary Environmental Assessment.

#### **City of Los Angeles Department of Public Works**

Assisted with creation of design criteria and objectives for a construction plan for a storm water treatment wetland. Design criteria and objectives were derived from established standards in the SWRCB Proposition 13 Non point Source Pollution Grant Program and Regional Water Quality Control Board's (RWQCB) Watershed Management requirements. Implemented native botanical restoration plans following construction.

#### **Sempra Energy Resources, Southern California**

Assisted with the creation of a habitat restoration plan for restoration of native desert habitat in the vicinity of the recently constructed La Rosita Transmission lines. The plan included control of invasive tamarisk species along the right-of-way for both the Intergeren and the Sempra transmission lines.

#### **Casden Properties, Santa Clarita, CA**

Performed a site evaluation and natural resources field survey of an approximately 90 acre undeveloped open space parcel in the city of Santa Clarita, Los Angeles County. Natural resource surveys included plants, wildlife, and communities. The assessment was intended to determine potential environmental development regulatory and compliance issues of this study site. Assisted in the preparation of a Final Report of Environmental Resources and Compliance issues.

#### **Awards**

Graduation with Honors (graduate)  
Graduation with Honors (undergraduate)  
USC Sea-Grant 2002-2003 Graduate Research Fellowship (\$12,000)  
USC Sea-Grant 2003-2004 Graduate Research Fellowship (\$12,000)  
CSULB Richard B. Loomis Graduate Research Award (\$250)  
Aquarium of the Pacific Research Grant (\$800)





## Specialized Training

Flat Tailed Horned Lizard Monitor Training – Administered by Bureau of Land Management, El Centro, CA. April 30, 2007  
*Caulerpa taxifolia* Identification Training – Administered by NMFS, Long Beach, CA. March 8, 2007  
Project Management Training (PM100) March 2006 Tetra Tech EC, Inc.  
Project Management Training (PM200) April 2006 Tetra Tech EC, Inc.  
CEQA 16-Hour Training Workshop – Successful CEQA Compliance, UCLA Extension Course  
40-Hour HAZWOPER, December 2004  
8-Hour HAZWOPER Refresher Jan 2006  
38-Hour Army Corp of Engineers Wetland Delineation and Management Training Program, Richard Chinn Environmental Training  
Nuclear Health Physics Radiation Protection Training Program, 1990  
Institute for Resource Management (IRM)  
NAUI Advanced Scuba Diver and California State University, Long Beach AAUS Scientific Research Diver

## Publications

**Hoisington, G.** and C. Lowe. 2005. Distribution, abundance, and population structure of the round stingray, *Urolophus halleri*, near a thermal discharge at Seal Beach, CA. Marine Environmental Research.

Lowe, C., G. Moss, **G. Hoisington**, J. Vaudo, D. Cartamil, M. Marcotte, Y. Papastamatiou. 2007. Caudal spine shedding periodicity and site fidelity of round stingrays, *Urolophus halleri* (Cooper), at Seal Beach, California: implications for stingray-related injury management. Bulletin of the Southern California Academy of Sciences.

## Contact Information:

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240 W. 23rd. St.  
Upland CA. 91784  
909-949-4046  
mihoner@earthlink.net

**Employment Objective:**

All phases of Botanical Consulting work including floristic inventories, rare plant surveys, vegetation sampling, analysis, and mapping.

**Education:**

M.S. 2003: Botany; Claremont Graduate University  
M.F.A. 1991: Photography; UC Santa Barbara  
B.A. 1981: Studio Art, UC Santa Barbara

**Publication:**

*Vascular Flora of the Glass Mountain Region of Mono County, California.* Aliso 20 (2), pp. 75-105, August 2003.

**Botanical Work Experience:**

Botanical Consultant, White & Leatherman Bioservices, Upland, CA. 2003 - present.

Experience and responsibilities include:

- Field Surveys throughout southern California for a variety of clients (private landowners, environmental consulting contractors, public agencies, engineering firms.)
- Familiarity with species compositions and vegetation types for a variety of southern California floristic regions (Low and High Deserts, Montane Zones, Chaparral, Coastal Sage Scrub).
- Accurate field and lab plant identification, including a working relationship with 2 major southern California herbaria and their staff for quick plant identification of difficult taxa (Rancho Santa Ana Botanic Garden, and UC Riverside)
- Rare Plant Research with CADFG NDDB, and CNPS Rarefind database.
- Accurate Mapping of rare plant occurrences.
- Survey Report preparation

**References:**

Scott White, White & Leatherman Bioservices (909) 949-3686

Steve Boyd, Director of the Herbarium, Rancho Santa Ana Botanic Garden (909) 625-8767 x248

Mark Porter, Research Scientist, Rancho Santa Ana Botanic Garden (909) 625-8767 x229

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(760) 608-3105

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Cynthia Hopkins is a biological consultant, providing services in wildlife and biological assessments, research and reporting. Accurate and reliable in collecting detailed data from transects, grids and other sampling methods. Proficient at collecting field data with maps and differentially corrected GPS or using aerial photos. Experienced at working under permits, biological opinions, MOUs, etc. Familiar with state and local laws pertaining to special status species and wetlands. Skilled computer user and data handler with additional experience in biology-related applications. Worked with staff from the U.S. Fish and Wildlife Service, U.S. Bureau of Land Management, National Marine Fisheries Service, U.S. Army Corps of Engineers, California Department of Fish and Game, California Transit Authority, Los Angeles Department of Water and Power, and Las Vegas Valley Water District as clients; for permits, and/or approval for work. Avid hiker, camper, traveler and outdoors photographer. All equipment necessary to conduct extended field work, under adverse conditions and cross-country travel, including 4WD vehicles. Excellent field skills. Liability Insurance through Hartford Casualty Insurance Co.

### PROFESSIONAL EXPERIENCE

#### **Biological Consultant** *Xeric Specialties, Ridgecrest, CA (April 2003 – present)*

Conduct biological consulting services for site assessments, impact analyses, construction projects, and habitat restoration programs. Assisted with site assessments and rare plant and animal searches at project sites within Kern, Inyo, Los Angeles, San Bernardino, Riverside, and San Diego counties in CA and Clark County, NV. Conducted pollinator study of rare milkvetch for U.S. Fish and Wildlife Service to identify major pollinators of *Astragalus jaegerianus* in San Bernardino County. Presented pollinator study results at a scientific symposium sponsored by Fort Irwin NTC. Conducted fairy shrimp sampling in Los Angeles County, in the Castaic and Antelope Valley regions. Surveyed for fairy shrimps within San Benito and Fresno counties, in the Clear Creek Management Area for the U.S. Bureau of Land Management, including vernal pool sampling, site assessment, and report preparation including management and site rehabilitation recommendations. Other jobs include wildlife habitat and plant community assessments of pine plantation sites in the Angeles National Forest; quantitative vegetation sampling at Edwards Air Force Base; construction monitoring in desert tortoise and Mojave ground squirrel habitat; herbarium research and vegetation community mapping at sites throughout southern California and Nevada.

#### **Biological Consultant** *URS Corporation Oakland, CA (October 2001 – April 2003)*

Composed biological, environmental, and impact assessments for resource management programs. Projects included pipeline, road, bridge, and culvert construction or replacement; dam repairs; and hazardous materials mitigation. Calculated budgets for ecological restoration projects on the San Joaquin and Santa Clara rivers. Conducted surveys for a variety of different organisms and ecological systems, including State and Federally protected species. Worked as crew leader for fairy shrimp surveys in the Central Valley of CA.

#### **Executive Assistant** *URS Corporation, Oakland, CA (July 1999 – September 2001)*

Supported Vice President of environmental consulting firm. Managed financial analysis spreadsheets, assisted VP and accounting staff with management of projects.

#### **Teaching Assistant** *College of Forestry and Environmental Science, State University of New York, Syracuse, NY (September 1998 – December 1998)*

Managed students' grades and attendance for two courses (First-year Student Seminar and Terrestrial Community Ecology). Tutored students. Graded papers and assignments for two courses of 40 students each.

**Research Assistant** *Upstate Freshwater Institute, Syracuse, NY (August 1998)*

Monitored populations of freshwater fishes in Lake Onondaga, Syracuse, NY. Used gill nets, seine nets, and fyke nets to capture live fishes. Identified fish to species, performed body measurements, took scale samples, clipped fins, tagged fish, and released live fish. Collected sediment samples using an Ekman dredge.

**Quality Assurance Environmental Monitoring** *Chiron Corp., Emeryville, CA (November 1994 – June 1998)*

Monitored biological condition of manufacturing environment at biotechnical facility. Documented activities for FDA review. Conducted follow-up reports for deviations in facility performance. During a six month assignment in Siena, Italy, trained ten QA staff in FDA-approved procedures.

**Scientific Aid** *State of California, Department of Fish and Game, Sacramento, CA (April 1994 – November 1994)*

Evaluated stream habitat monitoring techniques, including aquatic macro-invertebrate collection, sediment quality analysis, and physical site characterization. Composed preliminary technical reports and entered data using Quattro Pro for Windows. Conducted random sampling tests of macro-invertebrate collections.

**Veterinary Assistant** *Soc. for the Prevention of Cruelty to Animals, San Francisco, CA (Nov 1992 – March 1994)*

Prepared dogs and cats for spay-neuter surgeries in high-volume clinic. Prepared and dispensed daily medication for sick shelter animals. Conducted animal health exams, including blood draws for viral analysis.

**Research Assistant** *Dept. of Entomology, University of Massachusetts, Amherst, MA (May 1992 – September 1992)*

Surveyed gypsy moth larvae, pupae, and egg mass populations within field sites. Surveyed small mammal populations within field sites using a capture-recapture method. Identified gypsy moth larvae mortality factors using a compound microscope.

**Research Assistant** *Dept. of Forestry and Wildlife Mgmt, University of MA, Amherst, MA (June 1991 - Dec 1991)*

Assisted with the maintenance of computer files for PC Arc/Info. Manipulated and modified databases.

**Veterinary Assistant** *All Creatures Great and Small Animal Hospital, Granby, MA (September 1990 – March 1991)*

Assisted veterinarian during surgeries and client visits. Analyzed blood samples for virus. Analyzed fecal samples for virus and endoparasites. Performed office duties, including admitting clients, maintaining computer records, and billing clients. Animal clients included dogs, cats, ferrets, rabbits, birds, and reptiles.

**Research Assistant** *Dept. of Forestry and Wildlife Mgmt, University of MA, Amherst, MA (Sep 1989 - May 1990)*

Organized and catalogued books, periodicals, and loose copies for professor's personal library. Conducted searches to identify sources for loose copies of articles.

**Horseback Riding Instructor** *Tara Stables, East Windsor, NJ (April 1987 – November 1987)*

Instructed students in basic English style horseback riding. Classes consisted of 4 students, ages 12 through 40. Taught horse care and handling, basic gaits, and beginner jumping.

**Stable Hand** *Tara Stables, East Windsor, NJ (June 1986 – August 1988)*

Trained two horses for dressage and jumping competition. Maintained horses and stable facilities, including feeding, watering, and turnout of horses; cleaning of stalls; care of sick or special-needs horses; and care for the stable-owned horses.

## **RECENT CLIENTS**

URS Corp. Oakland, San Diego, Santa Ana, and Las Vegas offices (Steve Leach, 510-893-3600 or Amanda Matthews-Neiswenter, 702-951-3318)

U.S. Fish and Wildlife Service, Ventura, CA (Connie Rutherford, 805-644-1766)

Las Vegas Valley Water District, Las Vegas, NV (Seth Shanahan, 702-822-3314)

Kleinfelder and Associates, Fresno, CA (Chris Enyedy, 559-486-0750)

Aspen Environmental Group, Agoura Hills, CA (Chris Huntley, 818-597-3407)

Phoenix Biological Consulting, Wrightwood, CA (Ryan Young 661-261 3390)

Naval Air Weapons Station (NAWS) China Lake, CA (Tom Campbell 760-927-1515)

## **EDUCATION**

University of Massachusetts, Amherst, MA, 1992

Bachelor of Science, Wildlife Biology, GPA: 3.55

State University of New York, Syracuse, NY, September 1998 – May 1999

Candidate for Master's of Science degree, Aquatic Biology, GPA: 3.9

## **PERMITS**

U.S. Fish and Wildlife Service Recovery Permit (TE-067351-0) to survey for fairy shrimp in California and Oregon

## **VOLUNTEER EXPERIENCE**

**Raptor Bander** *Golden Gate Raptor Observatory, Golden Gate N.R.A., Marin, CA (August 1995 – December 1995)*

Captured migrating raptors using bow-nets and live lures. Banded raptors with ID tags. Performed examinations of raptors, including speciation, body length, weight, and relative health. Provided for routine care of lure birds. Provided routine maintenance of banding site facilities and equipment.

**Docent** *Avian Conservation Center, San Francisco Zoo, San Francisco, CA (February 1993 – December 1993)*

Prepared diets and recorded meal consumption of captive breeding bald eagles and Andean condors. Handled and exercised a trained 6 year old golden eagle and 2 year old bald eagle. Exercised the golden eagle in front of zoo patrons. Answered questions following demonstration.

**Independent Study** *Dept. of Animal Science, University of Massachusetts, Amherst, MA (January 1989 – May 1989)*

Studied the effects of diet on nutrient levels in bovine blood. Drew blood samples, prepared reagents, performed colorimetric analysis using a spectrometer.

## **ADDITIONAL COURSES AND TRAINING**

**Desert Tortoise Surveying, Monitoring, and Handling Techniques Workshop.** November 2004. Conducted by the Desert Tortoise Council. Two day course.

**Kern County Flora, Jepson Herbarium, CA.** May 2004. Four day course covering identification of vascular plants in the southern Sierra Nevada region of Kern County, CA.

**Microbiotic Soil Crusts and Lichens of the Desert, Jepson Herbarium, CA.** April 2003. Two day course.

**Fifty Plant Families in the Field, Jepson Herbarium, CA.** March 2003. Four day course. Observed and identified over 50 plant families through a dichotomous key in locations throughout the San Francisco Bay Area, CA.

**California Fairy Shrimp Identification.** October 2002. Three day training with Mary Belk, MS. Learned to identify 22 species of fairy shrimps and two genera of tadpole shrimps which occur in CA and southern OR.

**California Freshwater Fish, California State University, Hayward Extension.** September 2001. Four month course with Dr. Samuel McGinnis. Learned to seine and identify freshwater fishes occurring in central and coastal CA.

## **SPECIFIC WORK EXPERIENCE**

6/07; Aspen Environmental Group, CA. Angeles National Forest, Los Angeles Co, CA. Botanical surveys of sensitive plant species for various management release sites, plantations, fuel stands, etc. Continuation of work conducted 5/04 through 10/05.

5/07; URS Corp., Santa Barbara Office, CA. Ocotillo Power Plant, Desert Center/Palm Springs, Riverside County, CA. Conducted protocol-level biota surveys for desert tortoise, Coachella Valley fringe-toed lizard and flat-tailed horned lizard; and habitat assessment for other Coachella Valley MSHCP species of concern.

4/07; Natural Resource Consultants, Inc. Centennial Grassland Project, west Antelope Valley, Los Angeles Co., CA. Botanical surveys using a modified point intercept methodology to construct a habitat model and a nested-quadrat methodology designed to collect species richness and cover data for a community composition analysis within a native perennial bunchgrass community.

3/07; URS Corp. San Diego Office, CA. Pisgah Solar One Project, Rodman Mountains and Upper Johnson Valley area, central San Bernardino Co., CA. Botanical/rare plant surveys and TnE biota habitat assessment.

4/06 to 7/06; URS Corp. Las Vegas Office, NV. Botanical/rare plant surveys for Toquap Wash Energy project, eastern Clark Co., NV.

4/06 to 5/06; Tetra Tech EM Inc. China Lake Naval Air Warfare Station, Ridgecrest, Kern Co., CA. Biological surveys for hazardous site assessments.

3/06; Kleinfelder and Associates. Terminal Project, Boron, Kern Co. CA. Desert tortoise and general biota survey.

9/05 to 3/06; Aspen Environmental Group. Mapped GIS inventory tree survey in Griffith Park, Los Angeles, CA for mitigation measures required for DWP proposed water line, Los Angeles, CA.

10/05 to 12/05; Resource Design Technology. Botanical surveys and consulting services for revegetation/reclamation plan for F.W. Aggregates mine, southeast of Lone Pine, CA.

5/05 to 10/05; URS Corp. San Diego, CA. Botanical surveys for proposed Southern California Edison Oak Valley transmission line project in Western Riverside Co (Beaumont-Banning area), CA. Sensitive plant species surveyed for included *Berberis nevini*, *Dodecahema leptoceras*, *Eriastrum densifolium* var. *sanctorum*, *Centromadia pungens* and *Calochortus plummerae*.

5/05; Southern Nevada Water Authority - Jones and Stokes Association – Botanical survey for proposed water pipeline in Las Vegas, Hidden and Coyote Springs Valleys (I-93 corridor) survey. Sensitive plant species surveyed for included *Astragalus geyeri triquetrus*, *A. preussii laxiflorus*, *Penstemon bicolor*, *Enceliopsis argophylla*, *Arctomecon californica*, *Gilia nyensis*, *Phacelia filiae*, *Arenaria stenomeris*, *Anulocaulis leiosolenus*, and *Eriogonum corymbosum nilsii*.

5/05; Phoenix Biological Consulting. Botanical/rare plant survey for proposed Service Rock sand and gravel mine near Garlock, E. Kern Co., CA. Sensitive plant species included *Mentzelia eremophila*, *Eschscholzia twissellmannii* and *Sclerocactus polyancistrus*.

3/05 to 11/05; URS Corp.-Las Vegas. Botanical/cactus surveys for FAA proposed Mesquite Airport on 2600 acre BLM takedown parcel in eastern Clark Co., NV. Sensitive plant species surveyed for included *Astragalus geyeri triquetrus*, *A. preussii laxiflorus*, *A. lentiginosus stramineus*, *Cirsium virginense*, *Eriogonum viscidulum* and *Pediomelum castoreum*.

3/05 to 5/05; China Lake NAWS - U.C. Berkeley. Assisted U.C. Berkeley professor Ted Papenfuss with installation and monitoring of pit-fall traps along springs in the Argus and Coso ranges, Inyo Co., CA. Volunteer work.

1/05; Phoenix Consulting - Bonterra Consulting. Vernal pool fairy shrimp surveys in Castaic Valley and Antelope Valley, Los Angeles Co., CA.

5/04 to 10/05; Aspen Environmental Group. Botanical and wildlife surveys for Angeles National Forest, Los Angeles Co., CA, for various management release sites, plantations, fuel stands, etc. Sensitive plant species surveyed for included *Swertia neglecta*, *Calochortus plummerae*, *C. palmeri*, *Castilleja gleasonii*, *Linanthus concinnus*, *Perideridia pringlei*, *Galium jepsonii*, *Lupinus excubitus johnstonii*, *Nemacladus gracilis*, and *Arenaria macradenia* var. *kuschei*.

1/04 to 3/04; U.S. Bureau of Land Management. Surveyed for fairy shrimps in San Benito and Fresno Co.s, in the Clear Creek Management Area, including vernal pool sampling, site assessment, and report preparation. Provided management and site rehabilitation recommendations.

12/04 to 5/05; Southern Nevada Water Authority - Las Vegas Wash Coordination Committee. Field ground-truth vegetation mapping project utilizing national NRCS vegetation mapping protocol methods.

05/03 to 3/06; Aspen Environmental Group. Botanical surveys for various project sites along DWR California Aqueduct in Los Angeles, San Bernadino and Kern Co.s, CA. Sensitive plant species surveyed for included *Erodium macrophyllum*, *Scutellaria bolanderi austromontana*, and *Calochortus clavatus*.

4/03 to present; U.S. Fish and Wildlife Service, Ventura Office. Conducted pollinator study of rare milkvetch (*Astragalus jaegerianus*) to identify major pollinators. Project site located within and near Fort Irwin NTC, San Bernardino Co., CA. Presented pollinator study results at a scientific symposium sponsored by Fort Irwin NTC.

4/03 to present; Southern Nevada Water Authority - Las Vegas Wash Coordination Committee. Vegetation and floral assessment, quantitative sampling design, collections and voucher preparation, restoration consulting, revegetation monitoring and worker education for Las Vegas Wash riparian habitats in flood control and water quality project areas.

04/03 to 7/05; Twining/ESR Corp.s Botanical/rare plant surveys for Granite/Desert Aggregate Five Bridges mining expansion project EIR, Bishop, CA. Sensitive plant species surveyed for included *Calochortus excavatus*, *Spartina gracilis*, *Chrysothamnus albidus*, *Oryctes nevadensis* and *Mentzelia torreyi*.

2003 to present; China Lake Naval Weapons Center and Edwards Air Force Base. Ongoing volunteer on western Mojave seasonal pool and playa biota, Kern Co., CA.

6/04 to 7/04; URS Corp. Botanical surveys for Mammoth/Bishop Airport expansion, Inyo/Mono Co.s, CA.

06/03 to 8/03; Caltrans-Robert Frank Construction, Inc. Pre-construction survey, monitoring and report for desert tortoise (*Gopherus agassizii*) and Mojave ground squirrel (*Spermophilus mohavensis*) per biological opinion in Olancho, CA.

01/03 to 4/03; Sanford Stone mine. Desert tortoise fence construction monitoring, clearance surveys and worker education in the BLM Rand ACEC, Red Mountain, CA. Sensitive plant species included *Mentzelia eremophila*, *Eschscholzia twissellmannii* and *Cryptantha clokeyi*.

04/03; Jones and Stokes Associates. General vegetation sampling for species richness, cover, density and rare plant surveys for Edwards AFB, San Bernardino Co., CA

9/02 to 3/03; Milburn-Hansen Riparian Restoration Plan, Fresno, CA. Developed a detailed cost estimate to provide client with initial cost estimate for the restoration of a 300 acre parcel. Restoration elements included riparian, wetland, and upland habitats. Estimate incorporated four levels of restoration magnitude to provide client with options for the restoration implementation.

3/02 to 3/03; Merced County Department of Public Works, Oakdale Road Bridge, Merced Co., CA. Conducted biological surveys for special status species, including nesting Swainson's hawks (*Buteo swainsoni*). Monitored construction activities during project. Monitored out-of-stream construction during fall breeding run of Chinook salmon (*Oncorhynchus tshawytscha*). Conducted mitigation monitoring of impacts to protected elderberry (*Sambucus mexicana*) shrubs. In accordance with Regional Water Quality Control Board measures, conducted in-stream aquatic macroinvertebrate sampling following completion of in-stream construction activities.

5/02 to 3/03; Federal Emergency Management Agency Flood Control Project, CA. Prepared Biological Assessments and Environmental Assessments for the construction of roadway repairs and culvert replacements from floodwater damage. Evaluated sites in San Benito, Napa, Inyo and Sonoma Co.s. Analyzed potential impacts to special status species, hydrology, and water quality. Consulted with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service regarding potential impacts and proposed mitigation for each project.

5/02; Port of Oakland, Damon Slough, Oakland, CA. Created interpretive signs to be placed in a restored wetland park. The signs are intended to provide the local community with a sense of value for their watershed and its natural resources.

4/02; Caltrans, Task Order 5, Dustin Acres, CA Conducted biological reconnaissance surveys along a proposed highway alignment in Kern Co., CA. Surveys focused on blunt-nosed leopard lizard (*Gambelia silus*), San Joaquin antelope ground squirrel (*Ammospermophilus nelsoni*), and San Joaquin kit fox (*Vulpes macrotis mutica*).

1/02 and 1/03; U.S. Postal System Stormwater Exposure, Hayward, CA. On call for second season of sampling to collect surface runoff during storm events. Conducted analysis of surface water runoff in Postal System Vehicle Maintenance Facility during winter storm events. Collected runoff at designated outfalls within the facility for analysis at offsite labs.

12/01 to 3/03; Kinder Morgan Energy Partners. Sacramento-San Joaquin Valley and Delta, CA. Conducted biological reconnaissance surveys and impact assessments for a new pipeline alignment and pipeline repair sites throughout Solano, Contra Costa, and Yolo Co.s,



including Swainson's hawks (*Buteo swainsoni*) and vernal pool fairy shrimps. Prepared a Biological Assessment for a proposed pipeline from Concord to West Sacramento, CA. Identified potential impacts to wildlife and wetlands.

10/01 to 3/03; Rhodia Peyton Slough, Martinez, CA. Currently assisting with the remediation of the Peyton Slough within the Rhodia, Inc. property. Prepared the Biological Assessment for a proposed realignment of the current slough channel. Consulted with the U.S. Fish and Wildlife Service regarding impacts to special status species.

10/01 to 2/02; Bakersfield Transportation Systems Study, Bakersfield, CA. Evaluated potential impacts of a proposed roadway system development through the City of Bakersfield and over the Kern River. Prepared biological analysis for a Preliminary Environmental Evaluation Report for Caltrans. Indicated potential areas of concern specific to water resources and special status species which have a potential to occur in the project area. Conducted initial windshield survey of proposed alternate routes for potential biological impacts.



## Jim Hornback

*Environmental Scientist*

### Areas of Expertise

- Environmental Permitting Documents
- Forestry, Wildlife, Fisheries, and Amphibian Investigations
- Environmental Monitoring
- Threatened and Endangered Species Surveys
- Timber Cruising
- Timber Harvest Plan Contract Administration
- EIRs and California Timber Harvest Plan preparation and field layout.
- Environmental Regulatory Compliance
- Grant Writing for Park and Fishery Habitat Improvement Projects

### Years of Experience

With URS: 1 Year  
With Other Firms: 15 Years

### Education

BS/Natural Resources/1999/  
California State University  
Humboldt

### Overview

Mr. Hornback has over 16 years of experience in preparing environmental documents and state and federal permits, including, wildlife and fisheries investigations, threatened and endangered species surveys, EIRs, timber harvest plans, water quality evaluations, fisheries habitat evaluations, and environmental regulatory compliance to meet the requirements of California Forest Practice Act, FERC, FESA, CESA, CEQA and NEPA. Additionally, Mr. Hornback has also been responsible for overseeing emergency forest road and watercourse crossing repairs in Mendocino County coastal areas, applying for and obtaining grant funds for park improvement and fishery habitat improvement projects in Humboldt County, wildlife surveys in northern and central California, and environmental monitoring for construction projects.

### Project Specific Experience

**Author, West Sacramento-Sacramento Streetcar Project, City of West Sacramento, Time & Material, 2007, \$10,000:** Mr. Hornback was responsible for writing the biological resources section for the West Sacramento-Sacramento Streetcar Project Draft Environmental Impact Report (DEIR).

**Biologist/author, Cotati Grade Cell Tower Project, Verizon Wireless, Time and Materials, 2008, \$5,900:** Mr. Hornback was responsible for assessing habitat and writing a combined Biological Assessment and Biological Evaluation for a Verizon multi-carrier wireless communication facility, near Cotati, California. Mr. Hornback was also responsible for coordinating payment for mitigation fees to the California Wildlife Foundation Fund for potential loss of California tiger salamander habitat in the Santa Rosa Plain Conservation Strategy Area.

**Biologist/author, Trinity County Cell Tower Project, Trinity County, CA, Verizon Wireless, Time & Material, 2007, \$10,000:** Mr. Hornback was responsible for assessing habitat and writing the Biological Assessments and Biological Evaluations for eight separate permits for the Verizon Trinity County multi-carrier wireless communication facilities.

**Biologist, SMUD Solano Wind Project Phase 3 Draft Environmental Impact Report, Sacramento Municipal Utility District (SMUD), Time & Material, 2007, \$851,000:** Mr. Hornback was responsible for writing the biological resources section of the SMUD Solano Wind Project Phase 3 Draft EIR.

**Environmental Monitor, San Antonio Reservoir Relocation Project, Chevron Pipe Line Company, Time & Material, Summer-Fall 2007, Cost:** Mr. Hornback monitored nesting pairs of white-tailed kites to insure they were not disturbed during the breeding season; surveyed for burrowing owls in the pipeline right-of-way; checked the work areas daily



before and after work; monitored drilling rig pads for compliance; monitored the pipe line right-of-way for frac-outs during drilling operations; notified operator and project managers of frac-outs when they occurred and contained frac-outs near watercourses; and participated in frac-out cleanup.

**Biologist, SMUD Solano Wind Project Phase 3 Environmental Permitting, Solano County, SMUD, Time & Material, 2007,**

**\$303,553:** Mr. Hornback assisted in avian use surveys during the winter and spring months to assess the Phase 3 project area for usage by raptors and passerine birds that migrate through and forage in the Phase 3 area.

**Environmental Monitor, Emergency Levee Repair Sacramento River Mile 69.9, Department of Water Resources, Time & Materials, 2007, 200,000:**

Mr. Hornback served as an Environmental Monitor on this Emergency Levee Repair project. He was tasked with identifying valley elderberries and Valley Elderberry Longhorn Beetle habitat within the repair site. He coordinated with the construction crews and the site inspector to insure compliance so that any endangered environment or sensitive species were protected.

**Environmental Scientist/Biologist, University Commerce Center Development Project, Placer County, First Industrial Realty Trust, Time & Material, 2007, \$4,280.00:**

Mr. Hornback served as an Environmental Scientist/Biologist on this project. He wrote the proposal for the scope of work with associated costs to perform the project, conducted a field due diligence biological surveys for habitat assessment, potential animals, and fauna that may occur within the boundaries of parcel.

**Project Environmental Scientist/Biologist, Solano Wind Project, Phase 2B, Environmental Compliance, Rio Vista, CA, SMUD, Time & Materials, Ongoing, \$387,192:**

As an Environmental Scientist/Biologist, Mr. Hornback organized the winter surveys and pre-construction surveys for burrowing owls at the site. He surveyed for burrowing owls, consulted on construction of burrowing owl exclusion devices, assembled exclusion devices, coordinated with staff to ensure that the CDFG 1995 protocol was followed, passively excluded and collapsed burrows adjacent to the construction area, scheduled, coordinated, and participated in consultations with CDFG, and assisted in avian use surveys.

**Technical Researcher, Yuba River Accord Water Transfers and Groundwater Management Plan, Yuba County Water Agency, Time & Material, 2005-2006, \$500,000:**

Mr. Hornback provided technical research and support for the development of the Yuba River Accord Water Transfers and Groundwater Management.

**Contributing author, Sacramento River Water Reliability Study, Placer and Sacramento Counties, Placer County Water Agency, Time & Material, 2005, Cost:**

Mr. Hornback investigated and described the fishery habitat, resources, and water quality issues of Dry Creek and



its tributaries in southwestern Placer and northwestern Sacramento Counties that are influenced by the Dry Creek Wastewater Treatment Plant.

**Principal Author, Oroville Facilities Federal Energy Regulatory Commission Relicensing (FERC) for Study Plan – Fisheries 3.1 Evaluation of Project Effects on Fish and Their Habitat within Lake Oroville, Its Upstream Tributaries, the Thermalito Complex, and the Oroville Wildlife Area, Characterize Inundated Littoral Habitat and Evaluate Effects of Fluctuations on Bass Nest Dewatering, Thermalito Complex, Oroville, CA., Department of Water Resources (DWR), Time and Material, 2004, \$45,000:** Mr. Hornback analyzed the project effects on fisheries resources and habitat within the sphere of influence of the Oroville Water Project.

**Co-Author, Oroville Facilities FERC Relicensing for Study Plan – Fisheries 3.1 Evaluation of Project Effects on Fish and Their Habitat within Lake Oroville, Its Upstream Tributaries, the Thermalito Complex, and the Oroville Wildlife Area, Task 3B and 3C: Project Operations Influencing Fish Habitat and Water Quality in the Thermalito Diversion Pool and the Thermalito Forebay, Thermalito Complex, Oroville, CA, DWR, Time & Material, 2004, \$45,000:** Mr. Hornback analyzed the effects of pumpback operations on water quality, specifically water temperature and percentage oxygen for these locations during project operation.

**Principal Author, Oroville Facilities Relicensing for Study Plan – Fisheries 3.1 Evaluation of Project Effects on Fish and Their Habitat within Lake Oroville, Its Upstream Tributaries, the Thermalito Complex, and the Oroville Wildlife Area, Task 5B: Characterize Fish Habitat in One-Mile Pond, Oroville Wildlife Area, DWR, Time & Material, 2004, \$45,000:** Mr. Hornback analyzed the water quality, habitat, and warm water and coldwater fishery resources occurring in the one mile pond in the Oroville Wildlife Area.

**Supporting author and technical research, Sacramento Valley Water Management Project, Sacramento River Valley, CH2MHILL, Time & Material, 2004, Cost:** Mr. Hornback was tasked with researching and describing the hydrological characteristics and biological resources of some of the more obscure tributaries to the Sacramento River for this CALFED groundwater management project.

**Principal Author, Oroville Facilities Relicensing for Study Plan – Fisheries 3.1 Evaluation of Project Effects on Fish and Their Habitat within Lake Oroville, Its Upstream Tributaries, the Thermalito Complex, and the Oroville Wildlife Area, Task 4B: Characterize Cold Water Pool Availability in the Thermalito Afterbay, Thermalito Afterbay, Oroville, CA, DWR, Time & Material, 2003, \$45,000:** Mr. Hornback analyzed dissolved oxygen and water temperatures and characterized suitability for fish for each month of the study period during project operation in the Thermalito Afterbay.

**Principal Author, Yuba River Development Project, Yuba Narrows II Construction Related Impacts Related to Blasting and Their**



**Effects on Fish, Lower Yuba River below Englebright Dam, Yuba County Water Agency, Time & Material, 2003, \$20,000:** Mr.

Hornback researched the potential impacts and effects of blasting to fish in the lower Yuba River. Mr. Hornback, while working for Surface Water Resources Incorporated wrote and submitted this report to National Marine Fisheries Service (NMFS) in September 2003, to convince them that blasting in bedrock adjacent to the Yuba River below Englebright Dam, for the installation of a “wye” bifurcation for a flow-through bypass would not affect fish in the Yuba River. NMFS has since incorporated portions of this report into the Biological Opinion for the Yuba River Development Project and the Conference Opinion and Biological Opinion for the Battle Creek Restoration Project, September 2003.

**Supervisor, Maintenance and Vegetation Clearing, Redwood Creek Levees, Humboldt County Public Works Department, Orick, CA, Time & Material, 2002, \$10,000:** Mr. Hornback served as a Supervisor and coordinated the annual maintenance and vegetation clearing of the Redwood Creek Levees by California Department of Forestry and Fire Protection Conservation Camp convict crews for Corps of Engineers certification of levees.

**Coordinator, Freshwater Creek Fish Ladder Design, Freshwater County Park, Humboldt County Parks Division, Time & Material, 2002, \$10,000:** Mr. Hornback coordinated multiple state and federal agency consultations and obtained all permits for the Freshwater Creek fish ladder design project for juvenile salmon.

**Environmental Analyst, Humboldt County Park Capital Improvement Projects, Humboldt County, Humboldt County Public Works, Time & Material, 2002-2003, \$150,000:** Mr. Hornback applied for and obtained state grant funds from the California Wildlife Conservation Board and resource agency permits. Additionally, he authored all CEQA documents in support of these projects.

**Technical Forester, Dublin Heights Ranch, LLC. Non-Industrial Timber Management Plan (NTMP), Cape Ridge, Humboldt County, Western Timber Services, Inc., Firm Fixed Price, 2001, \$40,000:** Assisted in the Layout of harvest units for the Dublin Heights Ranch, LLC NTMP for Jon McBride while working for Western Timber Services, Inc.

**Timber Cruiser, Storrie Fire Timber Cruise and Assessment, Storrie, CA, Union Pacific Railroad, Time & Material, 2001, \$150,000:** Timber Cruiser for Western Timber Services, representing Union Pacific Railroad to assess the extent of the burn, degree of damage to U.S. Forest Service timberlands resulting from the Storrie Fire, near Storrie, California in the North Fork of the Feather River drainage.

**Principal Surveyor, Northern Spotted Owl Surveys and Monitoring, Mendocino County, CA, Congerie River Limited Family Partnership, Time & Materials, 1994-2001, \$65,000:** Mr. Hornback was the principal surveyor for the Northern Spotted Owl on approximately 10,000 acres of Congerie River Limited Family Partnership timberlands.



**Surveyor, Project, Humboldt County, CA, Elk River Timber Company, Time & Materials, 1994-2002, \$75,000:** Mr. Hornback surveyed for the Northern Spotted Owl on Elk River Timber Company Lands and monitored existing known pairs of spotted owls.

**Forestry Team Member, Timber Harvest Plans, Truckee, CA, Croman Corporation, Firm Fixed Price, 1994, \$40,000:** Responsible for the selective marking for several 640-acre sections of timberland for high elevation helicopter Timber Harvest Plans for Croman Corporation.

**Team Member, Bear River Regional Resource Conservancy Watershed Assessment, Bear River Watershed, Humboldt County, California, Bear River Regional Resource Conservancy, Firm Fixed Price, 2000-2001, \$80,000:** Mr. Hornback assessed forest and ranch roads and watercourse crossing points for potential failure, erosion, undersized culverts, improperly aligned culverts, proper road drainage and potential mass wasting in the Bear River Watershed.

**Surveyor, Helen Barnum Family Trust lands Northern Spotted Owl Surveys and Monitoring, Southern Humboldt County, CA, Helen Barnum Family Trust, Time & Material, 1995-2001, \$75,000:** Mr. Hornback surveyed for the Northern Spotted Owl and participated in Northern spotted owl consultation with the California Department of Fish and Game on the Helen Barnum Family Trust lands.

**Timber Cruiser, Pioneer Investment Company Timber Cruise, Mendocino and Glenn Counties, Pioneer Investment Company, Time & Material, 2000, \$150,000:** Timber Cruiser for Western Timber Services, representing The Pioneer Investment Company v. Louisiana-Pacific Company in the assessment timberlands sold to Pioneer Investment Co.

**Timber Cruiser, Georgia-Pacific Timber Cruise, Mendocino County, CA, The Campbell Group, Time & Material, 1999, \$150,000:** Timber Cruiser for Western Timber Services, representing The Campbell Group to assess the volume, grade, and value of timber and timberlands within Mendocino County for the purchase of the Georgia-Pacific timberlands.

**Timber Cruiser, Louisiana-Pacific Timber Cruise, north coast timberlands, U.S. Timberlands, Time & Material, 1998, \$150,000:** Timber Cruiser for Western Timber Services, representing the U.S. Timberlands for the purchase of the Humboldt, Mendocino, and northern Sonoma County's timberland holdings of the Louisiana-Pacific Company.

**Author, Houghton-Branscomb Timber Harvest Plan, Mendocino County, CA, Congerie River Limited Family Partnership, Firm Fixed Price, 1996, \$20,000:** Mr. Hornback was co-author of the Houghton-Branscomb Timber Harvest Plan and assisted in the harvest plan layout according to the California Forest Practice Rules.

**Technical Forester, Forest Home North Timber Harvest Plan, Bear River Ridge, Humboldt County, Western Timber Services, Fixed Cost, 1994, \$30,000:** Mr. Hornback assisted in the layout of the harvest units to the Forest Home North THP specifications (Russ Ranch and





Timber Company, LLC) on Bear River Ridge for Western Timber Services, Inc.

**Timber Cruiser, Helen Barnum Family Trust Timber Cruise, Southern Humboldt County, CA, Helen Barnum Family Trust, Time & Material, 1994-1995, \$100,000:** Timber Cruiser for Western Timber Services, representing the Helen Barnum Family Trust to appraise the value and volume of timber on the Barnum family timberlands.

### **Professional Societies/Affiliates**

California Licensed Foresters Association (CLFA), Associate Member  
1992-Present.

### **Specialized Training**

2007/Clear Business and Technical Writing, Effective Training Associates, Inc.

2006/Archaeological Training for Resource Professionals Re-Certification, sponsored by CDF&FP and the California Licensed Foresters Association with Professional Archaeologists as instructors.

2001/Surveying for Amphibians and Classification of Watercourses for Foresters, sponsored by The Wildlife Society, CDFG, Green Diamond Resource Company, and the California Licensed Foresters Association

1998/Geology and Mass-Wasting (soil erosion) in Forested Landscapes Workshop, California Licensed Foresters Association & California Division of Mines and Geology

1996/Road Location and Design Workshop, California Licensed Foresters Association

1995/Marble Murrelet Survey Training and Certification

### **Chronology**

12/06-Present: URS Corporation, Sacramento, CA

04/03-06/06: Surface Water Resources, Inc. (SWRI), Sacramento, CA

04/02-01/03: Humboldt County Department of Public Works, Eureka, CA

05/94-04/02: Western Timber Services Inc., Arcata, CA

05/92-05/94: C. Stoneman Forestry Services, Eureka, CA

05/91-01/92: Northwest Forest Consultants, Chico, CA

05/90-08/90: Weaverville Ranger District, Shasta-Trinity National Forest, CA

05/89-09/89: Simpson Timber Company (Green Diamond), Korb, CA





### **Contact Information**

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[jim\\_hornback@urscorp.com](mailto:jim_hornback@urscorp.com)

Areas of Expertise	<p>Biology, Environmental Permitting  10(a) Recovery Permit for all listed Fairy Shrimps (TE-115725)  Knowledge of native flora and fauna in the San Diego County area  Experience and training in wetland delineation of rivers and tributaries in the arid southwest.  General Survey and Identification of native plants and animals of San Diego County.  Mapping of vegetation communities according to the Holland Code (1986).</p>
Total Years of Experience	3
URS	3
Other Firms	0
Education	BA/2003/Environmental Biology/University of Colorado-Boulder,
Registration/Certification	U.S. Fish and Wildlife Service Recovery Permit 115725-0 All listed Branchiopod Species
Overview	<p>Ms. Howard is a biologist with experience in working with sensitive plant and animal species of southern California, especially San Diego County. She has a background in the behavior and genetics of fish and mammal species, and has participated in research projects in these areas. She also has experience in habitat assessment, field surveys, and construction monitoring, and is now expanding into environmental permitting and regulations.</p>
Project Experience	<p><b>Wildlife Surveys</b></p> <p><b><u>Birds</u></b></p> <p><b>Coastal California gnatcatcher</b></p> <p><b>805 Protocol Surveys for California Gnatcatcher</b> - Involved in planning, coordinating, and observation time for protocol surveys of California Gnatcatcher along the 805 freeway in San Diego, California. (2006)</p> <p><b>805 Vegetation Mapping and Wetland Delineation</b> - Accumulated 1.5 hours of direct observation time of California gnatcatchers while conducting vegetation mapping and wetland delineation of the 805 area. Observed gnatcatchers in different habitat types under varying degrees of disturbance, including isolated patches of coastal sage scrub and maritime succulent scrub. (2006)</p> <p><b>Caltrans SR-52 Surveys</b> - Observed California gnatcatchers and other species while conducting biological surveys of the 52 Highway. (2005)</p> <p><b>Caltrans SR-11 Surveys</b> - Observed gnatcatchers while conducting general surveys of the SR-11 project area. (2005)</p> <p><b>Flat Rock Land Company Village 3 Parcel A project</b> - Accumulated 5 hours of direct observation time of gnatcatchers while conducting general wildlife surveys, and while performing construction monitoring of the project area. (2004-2005)</p> <p><b>Dana Point Headlands LLC project</b> - Accumulated 1.5 hours of observation</p>

time while performing vegetation surveys and construction monitoring of the headlands site. (2005)

**SONGS Biological Surveys** - Accumulated 0.5 hours of observation time of gnatcatchers while performing general wildlife surveys on costal portions of MCB Camp Pendleton. (2004-2005)

**Basilone Road Re-Alignment Surveys** - Accumulated 0.5 hours of observation time of gnatcatchers while conducting biological surveys of the inland portions of MCB Camp Pendleton. (2004)

### **Least Bell's Vireo**

**SANDAG 805 Protocol Surveys** - Conducting protocol surveys for Least Bell's Vireo and other riparian species along the 805 freeway in several locations, including the Otay, Sweetwater, Penesquito, Rose, and San Clemente waterways. (2006-Ongoing)

**Caltrans SR-52 Protocol Surveys** - Conducted protocol surveys at two separate locations for least Bell's vireo and other riparian avian species. Identified and mapped vireo territories. (2005)

**Oak Valley Protocol Surveys** - Conducted protocol surveys for least Bell's vireo on the San Timeteo creek. (2005)

**Duke Chula Vista Vireo Assessment survey** - Performed surveys for least Bell's vireo along the Otay river. Identified territories and mapped locations of vireos located near proposed impact areas. (2005)

**Lakeside Land vireo assessment surveys** - Surveyed progress of riparian habitat restoration and identified changes in least Bell's vireo populations in the area. (2004-2005)

**Chula Vista Crossings construction monitoring.** Surveyed riparian areas adjacent to construction area for sensitive avian species. Identified migrant least Bell's vireo and tracked movements of this individual over several weeks. (2005)

**FEMA Big Tujunga Dam Protocol surveys** - Assisted in protocol surveys for vireos and other sensitive avian species. (2005)  
Burrowing Owls

**Caltrans SR-11 Burrowing Owl habitat assessment** - Conducted Consortium protocol surveys for burrowing owls in the SR-11 project area. Observed reproductive progress of identified owls over spring season. (2005)

**Caltrans SR-7 Burrowing Owl Passive Relocation and Monitoring** - Identified burrowing owls in Imperial County, CA. Passively relocated owls from proposed impact areas to safe areas during the non-breeding season. Used fiber-optic scope to investigate potential owl burrows. Constructed artificial burrows for relocated owls. Monitored progress of owls while highway constructed. Accumulated

hundreds of hours of direct owl observation contact time during project. (2004-2005)

**Kinder-Morgan Concord to Sacramento Pipeline Project** - Investigated potential burrowing owl habitat in the San Joaquin valley. Used fiber-optic scope to assess breeding status of potentially impacted owl burrows. Observed behavior of identified owl burrows of concern. (2005)

### Invertebrates

**Successfully passed the USFWS test for Quino**  
Quino Checkerspot Butterfly (2006)

**805 Quino Checkerspot Butterfly Surveys** - Assisted in QCB surveys in the vicinity of the 805 freeway in San Diego, California. (2006)

**Flat Rock Land Company Village 3 Parcel A Protocol Surveys** - Participated in protocol survey for QCB as an assistant for Jim Rocks (TE-063620) and Brian Lohstroh (TE-063608). Was able to observe Quino during survey for one hour before it left the area. (2004)

**SR-11 Quino Checkerspot Butterfly Protocol Surveys** - Participated in three protocol surveys for QCB in the East Otay Mesa area as an assistant for Brian Lohstroh. Did not observe Quino, but gained familiarity with several other Lepidoptera of southern California. Acquired four hours of experience identifying butterflies under protocol conditions. (2005)

**Gregory Canyon Quino Checkerspot Butterfly Protocol Surveys** - Participated in three protocol surveys for QCB in the Pala area as an assistant for Brian Lohstroh. Did not observe Quino, but identified nearly 20 species of Lepidoptera under protocol survey conditions. Acquired nine hours of experience identifying butterflies in Quino suitable habitat. (2005)

**Otay Land Company Parcel D Biological Surveys** - Conducted general surveys for wildlife in the Jamul mountains with Brian Lohstroh in an area known to support Quino. Did not observe quino, but acquired six hours of experience surveying Lepidoptera in Quino-suitable habitat areas. (2005)

### Fairy Shrimp

#### **Education**

Fairy Shrimp Identification Course—Mary Schug Belk, M.S. Learned taxonomy of *Anostraca* and *Notostraca* species of California. Passed identification exam at end of course.

#### **Field Experience**

**805 Wet Season Vernal Pool Surveys** - Planned and conducted protocol surveys for listed fairy shrimps in suitable habitat near the 805 freeway in San Diego, California. (2006)

**Southern California Edison SONGS wet season vernal pool assessment -**

Involved in surveys for listed fairy shrimp species near SONGS site on Camp Pendleton, California. Spent 22.5 hours with permitted biologists surveying *Branchinecta lindahli*, *B. sandiegonensis*, and *Streptocephalus woottoni*. Spent an additional 1.5 hours assisting in laboratory identification of voucher specimens collected for this project. (2005)

**Caltrans SR-11 wet season vernal pool assessment -** Involved in surveys for listed fairy shrimp species in Otay Mesa, California. Spent 21.0 hours with permitted biologists surveying for *S. woottoni*. Spent an additional 0.5 hours in the laboratory assisting in identification and accessioning of these specimens. (2005)

**Caltrans SR-11 and SR-52 dry season vernal pool surveys -** Involved in conducting protocol dry season surveys of vernal pools in Otay Mesa and Claremont, California. Helped D. Christopher Rogers collect soil samples for cyst analysis of fairy shrimp species. (2005)

**Reptiles and Amphibians**

**Metropolitan Water District Desert Tortoise surveys -** Conducted field work to identify sensitive plant and wildlife species in the Mojave Desert. Observed tortoise during surveys, identified other tortoise signs. (2004-2005)

**Gregory Canyon Arroyo Toad surveys -** Involved in surveys for arroyo toad, *Bufo californicus*, along the San Luis Rey river near Pala, CA. Observed several male toads calling and visually identified both arroyo toad and western toad, *Bufo boreas*. (2005)

**San Mateo Exotic Predator Control -** Removed exotic species, including bullfrogs, *Rana catesbeiana*, and crayfish *Procambarus clarkii*, from San Mateo lagoon to improve habitat for arroyo toad and tidewater goby. Conducted surveys for and identified arroyo toad adults and larvae as part of this project. (2004-2005)

**Mammals****Education**

Bat Ecology and Field Techniques—Dave Johnston, Ph.D. and Joe Szewaczak, Ph.D., September, 2004. Learned about field identification, natural history, and acoustical monitoring techniques of Chiroptera species of California.

**Field Experience**

**Disease Ecology of Prairie Dogs -** Assisted in disease ecology study of bubonic plague in prairie dogs and other grassland rodents. Involved in trapping, anesthesia, blood collection, flea collection, tissue collection, behavioral observation, and laboratory processing of samples. Trained in Animal Care

techniques and trapping procedure for these species. Gained experience with Tomahawk live traps. (2003)

### **Environmental Permitting and Regulation**

**CalNev Petroleum Pipeline Upgrade** - Involved in gathering necessary planning documents and HCP plans from cities, private landowners, the Department of Defense, and the Federal Government for a 300 mile pipeline alignment in southern California and Nevada. Coordinated with various agency officials to initiate formal Consultation for the project. (2006)

**FEMA Hurricane Katrina Temporary Housing Relief Project** - Worked as part of the environmental review team for the Louisiana Joint Field Office. Conducted site visits to proposed temporary housing sites to assess for existing resources and hazards. Prepared abbreviated NEPA documentation as part of the review process. Coordinated directly with construction contractors, FEMA officials, and the Army Corps of Engineers to develop plans for temporary housing sites. (2005)

**Caltrans SR-11 Biological Surveys and Report**, Participated in a wide range of biological surveys for a proposed road alignment in Otay Mesa, California. Wrote Natural Environment Survey (NES) report for California Department of Transportation (Caltrans). Worked with existing planning documents, including the MSCP and USFWS critical habitat areas in the Otay Mesa area to determine the impacts of the proposed project on natural areas. (2005)

**Southern California Edison Oak Valley Biological Report** - Involved in planning biological surveys for a proposed electrical substation building and line reconductoring project in Beaumont, CA. Met with client in the field to discuss needs of the project, and helped plan the appropriate surveys. Wrote biotechnical report for the proposed project.

**Flat Rock Land Company Biotechnical Report** - Involved in biological surveys for a proposed development in Chula Vista, California. Wrote biotechnical report, and oversaw revisions to meet requirements of the City of Chula Vista MSCP Subarea Plan.

**City of San Marcos Twin Oaks Valley Road Extension** - Helped write Biological Assessment (BA) of a proposed road extension. Helped monitor wetland restoration area used as mitigation for this project.

### **Wetland Delineation**

**SANDAG 805 Biological Surveys, San Diego California** - Conducted wetland delineation of rivers and tributaries within the boundaries of the Interstate 805 Right-of-Way. (2006)

**Caltrans State Route 52, Santee, California**,. Conducted wetland delineation along the San Diego river and various unnamed tributaries flowing under the freeway. Coordinated GIS mapping of these areas and reporting of results.

(2005)

**Caltrans SR-11, Otay Mesa, California.** Conducted wetland delineation of five unnamed tributaries within a proposed road alignment. (2005)

**Flat Rock Land Company Village 3 Parcel A, Chula Vista, CA** - Conducted wetland delineation along the Otay River. (2005)

**Gregory Canyon Landfill** - Conducted wetland delineation of the San Luis Rey river and two unnamed tributaries. (2004)

**Brown property** - Assisted in wetland delineation for a man-made lake in Racho Santa Fe, California. (2004)

### **Habitat Restoration**

**Sloan Canyon Sand Mine, San Diego, CA, Vegetation Restoration monitoring** - Conducted vegetation monitoring using the point-intercept method, recorded improvement for a multi-phase restoration project. (2004)

**San Elijo Hills LLC., San Diego, CA, Riparian Vegetation Restoration Monitoring** - Conducted vegetation monitoring using the point-intercept method, and made recommendations for improvement. (2004-Ongoing)

### **Construction Monitoring**

**SDUSD Golden Hill School Project** - Monitored restoration area associated with construction of new school. (2004-2005)

**SDUSD Thurgood Marshall School** - Monitored erosion control area and potential restoration site associated with the construction of a new school. (2005)

Professional Associations

Member, Western Section of the Wildlife Society





## Jeffery D. Johnson

*Biologist/ Botanist*

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### Areas of Expertise

Native Plants and Noxious Weed Surveys

Native Plant Salvage Plans

NEPA Compliance

Biological Assessment & Habitat Assessment

Vegetation Monitoring

Riparian Restoration

### Years of Experience

With URS: 1 Year 8 Months

With Other Firms: 2 Years

### Education

MS/Plant Biology / 2005 /  
Arizona State University, Tempe

BS/Plant Biology/2002 /  
Arizona State University, Tempe

### Registration/Certification

N/A

### Overview

His professional experience includes serving as field manager, and field technician for regulatory biology and environmental compliance projects. Projects he has worked on include vegetation growth and survivorship surveys, native plant surveys, riparian restoration, and vegetation water use studies. His field technician experience includes plant inventories for native plant preservation plans; riparian habitat evaluations, inventories, and monitoring; noxious weed surveys, jurisdictional delineations, and habitat evaluations for special status species.

### Project Specific Experience

#### **Biologist/Botanist, Clark County Wetlands Park Habitat Enhancement and Restoration Plan, 2006- present:**

Responsibilities include development of a habitat restoration plan for the Clark County Wetlands Park. This includes analysis of existing soil, hydrological, vegetation, wildlife, and flood control conditions in the Park. Plan includes recommendations and a phasing plan for invasive species removal, matching of appropriate native plant communities to the different soil, hydrological, and other conditions, and recommendations for wildlife habitat enhancement.

#### **Biologist/Botanist, Toquop Energy Project, 2006-present:**

Developed a Biological Assessment and Biological Resources section of an Environmental Impact Statement for a proposed coal-fired power plant, rail line, and access road. Duties include analysis of impacts, including impacts from heavy metal and nitrogen deposition, development a BLM Noxious Weed Risk Assessment, and development of monitoring and mitigation measures for weeds, desert tortoise (Mojave population), and Las Vegas buckwheat.

#### **Biologist/Botanist, Cardon Road Bypass, 2007:**

Developed an Environmental Assessment for a proposed bypass road on BLM lands. Duties included field reconnaissance, plant inventory, analysis of suitable habitat for special status species (desert tortoise Sonoran population), and analysis of air quality, socioeconomic, recreational, biological, and grazing impacts as well as the development of mitigation measures.

#### **Biologist/Botanist, Kinder Morgan, Pipeline Natural Resources Survey, 2007:**

Conducted field evaluations of special status species habitat, jurisdictional washes, and native plants for proposed pipeline maintenance. Duties included desert tortoise (Sonoran population) habitat suitability evaluation, memo preparation, and documentation of conditions on-site.



**Biologist/Botanist, City of Phoenix, Layton Wash, 2007:**

Developed a Biological Review as part of a Jurisdictional Delineation Report for a proposed channelization project. Duties included field reconnaissance, plant inventory, jurisdictional delineation of a desert washes, and analysis of impacts.

**Biologist/Botanist, Arizona State Land Department Area 4 and 4E, 2007-present:**

Developed a Biological Review as part of a Jurisdictional Delineation Report for a proposed land sale. Duties included field reconnaissance, plant inventory, jurisdictional delineation of desert washes, and analysis of impacts.

**Biologist/Botanist, City of Phoenix, Sonoran Boulevard Jurisdictional Delineation, 2007-present:**

Developed a Biological Review as part of a Jurisdictional Delineation Report for a proposed roadway. Duties included field reconnaissance, plant inventory, jurisdictional delineation of desert washes, and analysis of impacts.

**Biologist/Botanist, Arizona Department of Environmental Quality, Klondyke Wash Jurisdictional Delineation, 2007-present:**

Developed a Biological Review as part of a Jurisdictional Delineation for landfill capping activities. Duties included field reconnaissance, plant inventory, jurisdictional delineation of desert washes, and analysis of impacts.

**Biologist/Botanist, Tri County New Mexico Resource Management Plans, 2006-2007:**

Drafted the Biological Resources sections of and Environmental Impact Statement for the proposed Resource Management Plan. Duties include development of management alternatives for fish and wildlife and special status species sections.

**Biologist/ Botanist, Beaver Dam Wash Bridge Reconstruction, 2006-present:**

Completed wetland functioning assessment, including wetland plant species identification, to serve as a baseline for post-bridge construction monitoring of the wetland.

**Biologist/ Botanist, Northern Parkway Project, 2006 – present:**

Completed a Biological Assessment and Biological Resources section of an Environmental Assessment for a proposed super street including bridge crossings of the New and Agua Fria Rivers. Duties included field reconnaissance, plant inventory, identification of endangered species, analysis of suitable habitat for endangered species, and determination of effects on vegetation, wildlife, and endangered species.

**Biologist/Botanist, Litchfield Park Pedestrian Underpass, 2007:**



Completed Biological Review for a proposed pedestrian underpass. Duties included field reconnaissance and analysis of impacts to native vegetation and wildlife.

**Biologist/Botanist, Black Mesa Project, 2006- 2007:**

Finalized the draft Biological Assessment and Biological Resources section of an Environmental Impact Statement for a proposed renewal of a coal mine, the construction of a coal slurry pipeline, well field, and water supply pipeline. Duties included analyzing impacts on vegetation, wildlife, and special status species from proposed infrastructure and aquifer drawdown and coordinating with USFWS, USFS, AGFD, Navajo Nation, and the Hopi Tribe.

**Biologist/Botanist, Black Mesa Project Navajo Nation Biological Evaluation, 2007:**

Assisted in development of Navajo Nation Biological Evaluation for a proposed coal mine, coal slurry pipeline, and water supply pipeline. Duties included drafting species accounts for Navajo Nation listed plant and wildlife species.

**Biologist/Botanist, Ironwood Forest National Monument Resource Management Plan, 2006:**

Drafted the Biological Resources section of an Environmental Impact Statement and Biological Assessment for the proposed Resource Management Plan. Duties included analysis of impacts on vegetation, wildlife, and special status species, including species listed under the ESA.

**Biologist/Botanist, Lower Sonoran and Sonoran Desert National Monument Resource Management Plans, 2006:**

Drafted the Biological Resources, Fire Management, and Wild Horses and Burros sections of an Environmental Impact Statement and Biological Assessment for the proposed Resource Management Plans. Duties included analysis of impacts on fire management, wild horses and burros, vegetation, wildlife, and special status species, including species listed under the ESA.

**Biologist/ Botanist, Indian Bend Road Widening, 2006:**

Completed biological site reviews, native plant inventory, and noxious and invasive weed inventory on parcels identified for a proposed road widening along a heavily utilized roadway in Scottsdale, Arizona. Mapped vegetation communities in the project area and evaluated the habitat suitability for special interest plant and animal species, including threatened, endangered, and sensitive status species.

**Botanist, MCDOT Mesa Fiber Optic Installation, 2006:**

Conducted vegetation analysis, including native plant inventory, for proposed fiber optic cable installation.

**Biologist/ Botanist, Interstate 10 Widening, 2006:**

Conducted field surveys for proposed freeway widening in metropolitan Phoenix. Duties included documentation of nesting birds and suggestions for complying with the Migratory Bird Treaty Act.



**Project Manager, United States Environmental Protection Agency (USEPA) Clean Water Act (CWA) and Nonpoint Source Pollution Grants, Fort McDowell, Yavapai Nation, Arizona, 2005-2006:**

Responsibilities include conducting water quality sampling, organizing, designing and implementing the Wetland Restoration Project. Other tasks are planning and managing a large pollution clean up effort, writing grant proposals for the EPA and the United States Fish and Wildlife Service, and assisting contractors in National Pollution Discharge Elimination System (NPDES) Stormwater Phase II compliance for resort hotel and home sites.

**Teaching Assistant/ Lab Instructor, Tempe, Arizona, Arizona State University (ASU), 2003-2005:**

Responsible for teaching college level courses. The courses included Plants and Cities, Southwest Home Horticulture (basic arborist techniques), Organic Gardening. Additionally, taught all solo labs and created course syllabi, lesson plans as well as the administration and grading of essays, presentations quizzes and exams.

**Riparian Restoration Researcher, Rio Salado Restoration Project, City of Phoenix, Arizona, Arizona State University, 2003- 2004:**

Responsible for monitoring growth and vigor of cottonwood trees planted along the Salt River. These tasks included documenting findings, statistical analysis of data, and communicating results to the City of Phoenix.

**Field and Lab Technician, Vegetative Water Needs Study, San Pedro River, Arizona, Arizona State University, 2002- 2003:**

Responsible for gathering data to determine the volume of trees and shrubs to assess vegetative water needs and studying the effects of fire on mesquite re-sprouting and growth. This required extensive lab work to determine the mycorrhizal fungal colonization levels of cottonwood and tamarisk. The Systat statistical program and Excel were utilized to analyze data that was reported to the Southwestern Center for Environmental Research and Study.



## **Professional Societies/Affiliates**

Arizona Association of Environmental Professionals

## **Awards**

N/A

## **Quotations**

N/A

## **Languages**

English

Portuguese/ conversational

## **Specialized Training**

2007/ Desert Tortoise Surveying, Monitoring, and Handling Techniques Workshop/ Desert Tortoise Council

2007/ Southwest Noxious/Invasive Weed Short Course/ University of Arizona

2007/ Southwestern Willow Flycatcher Survey Training/ USFWS and AGFD

2007/ Chiricahua Leopard Frog Survey Training/ USFWS and AGFD

2006/ Southwest Noxious/Invasive Weed Short Course/ University of Arizona

2005/ ArcGIS I Trained-current project/ Bureau of Indian Affairs

2005/ Biometric Statistics Arizona State University

2004/ Soil Ecology / Arizona State University

2004/ Biological Invasions / Arizona State University

2003/ Trees and Shrubs of Arizona/ Arizona State University

2003/ Ecology & Planning for Restoration / Arizona State University

2002/ Restoration Ecology / Arizona State University

2002/ Community Ecology Arizona State University

2001/ Flora of Arizona / Arizona State University

## **Security Clearance**

N/A

## **Publications**

N/A



### **Contact Information**

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## Rich Kleinleder

*Senior Biologist/Certified Ecologist*

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### Areas of Expertise

Terrestrial and Marine Ecology  
Ornithology  
Environmental Impact Analysis

### Years of Experience

With URS: 6 Years  
With Other Firms: 20 Years

### Education

M.S., Biology, University of Alaska,  
Fairbanks, 1985  
B.S., Biological Science and  
Environmental Studies, Indiana  
University, 1979

### Registration/Certification

Professional Ecologist Certification,  
Ecological Society of America  
First aid/CPR  
“Bears to Bugs” wilderness survival  
Aviation safety/survival

### Overview

Mr. Kleinleder’s professional career has included a wide variety of research and teaching jobs with over 20 years of experience throughout Alaska. Research jobs included fieldwork, data analysis, and report writing for ABR, Inc., and the Institute of Arctic Biology on North Slope caribou/oilfield development interactions, bird migration and breeding in Interior Alaska, seabird populations in the Bering Sea, and Dall sheep energetics in the Brooks Range. He has taught bird biology classes for Kenai Peninsula College and had teaching assistant positions at the University of Alaska, Fairbanks. He is the author of a birding website and “hotspots” map for Homer and conducts local breeding bird surveys for the national program. Mr. Kleinleder also co-founded an innovative technology company, SeeMore Wildlife Systems, which designed, constructed, and installed remotely controllable video camera systems for real-time wildlife viewing and research.

Mr. Kleinleder joined the URS Environmental Services team in the spring of 2001 and has since worked on a variety of projects for state and federal agencies. His writing provides a clear and objective presentation of scientific subjects within the context of what is required by pertinent natural resource laws, including the National Environmental Policy Act, Endangered Species Act, Migratory Bird Treaty Act, and the Marine Mammal Protection Act. He is a senior author for effects on threatened and endangered species as well as non-ESA-listed birds and mammals. Examples of his relevant project experience with URS are provided below:

### Professional Presentations

**Society for Marine Mammalogy 17<sup>th</sup> Biennial Conference, Cape Town, South Africa, December 2007.** Mr. Kleinleder gave an oral presentation titled, “Assessment of injury and mortality due to research activities: the Steller sea lion example”. This paper described the risk assessment model developed for the EIS on the effects of research activities on Steller sea lions and northern fur seals (see below). This model is currently used in the permitting process to authorize research on this endangered species.

**Pacific Seabird Group Annual Meeting, Girdwood, Alaska, February 2006.** Mr. Kleinleder gave an oral presentation titled, “Assessment of Impacts on Seabirds in the Alaska Groundfish Fisheries”. This paper explained the NEPA methodology and organization of the direct, indirect, and cumulative effects analysis for seabirds in the Alaska Groundfish Programmatic EIS (see below).





**American Fisheries Society Annual Meeting, Anchorage, Alaska, September 2005.** Mr. Kleinleder gave an oral presentation titled, "Evaluating fishery management tools for protecting seabird populations". This paper discussed ideas for using seabirds as indicator species in an ecosystem management context that arose from his work on the Alaska Groundfish Programmatic EIS (see below).

## **Project Specific Experience**

**National Marine Fisheries Service – Draft Environmental Impact Statement (EIS) on Subsistence Harvest of Cook Inlet Beluga Whales, in progress.** Mr. Kleinleder developed impact assessment criteria based on an Administrative Law Judge ruling that seeks to balance the needs for recovery of the population and preservation of Alaska Native subsistence culture. The effects analysis utilizes two population models that focus on different harvest levels and the extinction risk from cumulative effects.

**National Marine Fisheries Service – Proposed Listing of the Cook Inlet Beluga Whale under the Endangered Species Act, in progress.** Mr. Kleinleder is participating in the team effort to analyze over 180,000 public comments on the proposed rule.

**National Marine Fisheries Service – EIS for the Alaska Bowhead Whale Subsistence Hunt, 2007.** Mr. Kleinleder helped develop the cumulative effects analysis methodology and contributed to the cumulative effects analysis on bowheads with respect to climate change and oil and gas development in marine environments.

**National Marine Fisheries Service – EIS on the Effects of Authorized Research on Steller Sea Lions and Northern Fur Seals, 2007.** Mr. Kleinleder was the Technical Lead for this project and worked closely with staff from NMFS Permitting Office and the National Marine Mammal Laboratory to identify and analyze the effects of research on these species. This project was driven by Endangered Species Act and Marine Mammal Protection Act considerations as well as NEPA compliance issues.

**Knik Arm Bridge and Toll Authority – Draft EIS for the Knik Arm Crossing, 2006.** URS was responsible for the cumulative effects sections of this ongoing project. Mr. Kleinleder helped establish the methodology used by URS authors and was responsible for writing the sections on terrestrial and marine wildlife for the DEIS and Technical Reports. This work includes analysis of cumulative effects on the Cook Inlet beluga whale, a stock that has experienced substantial declines in recent years and is currently under review for listing under the Endangered Species Act.

**Alaska Railroad Corp. – Environmental Assessment (EA) for Eielson Branch Realignment Project, 2005.** Mr. Kleinleder authored the fish and wildlife affected environment and impacts and mitigation sections for this project near Fairbanks.



**U.S. Fish and Wildlife Service – Steller’s Eider Nest Monitoring, 2005 and 2003.** Mr. Kleinleder installed several remote video camera systems to monitor nesting success of this threatened species in Barrow, Alaska. This system included microwave transmission of the video signal from nest sites to a research facility where the images were digitally recorded. In 2005 the work documented nest predation from jaegers and nest abandonment after disturbance.

**Bureau of Land Management - EIS for the Ring of Fire Resource Management Plan, 2005.** This project covered BLM lands in an extensive area from Southeast Alaska to the western Aleutians. Mr. Kleinleder wrote the Biological Assessment for threatened and endangered birds and marine mammals as well as the wildlife sections of the DEIS.

**National Park Service - EIS for the South Denali Visitor Center, 2005.** Following the directives in the National Park Service’s revised DO-12 NEPA Handbook, Mr. Kleinleder authored the affected environment, direct, indirect, and cumulative effects sections for birds and mammals.

**Bureau of Indian Affairs – EIS for an Oil Spill Response Facility in Cordova, Alaska, 2004.** Mr. Kleinleder authored the wildlife technical report as well as the EIS sections for terrestrial and marine bird and mammal species. This work included field surveys for bald eagle nests and intertidal life. One alternative included construction of a new road and followed basic FHWA procedures for environmental impact assessment.

**National Marine Fisheries Service – Programmatic Supplemental EIS for the Bering Sea/Aleutian Islands/Gulf of Alaska Groundfish Fisheries, 2001-2004.** Mr. Kleinleder made extensive contributions to this ground-breaking project. He is the primary author for all sections pertaining to seabirds and co-authored the marine mammal sections, including past and present effects on each species, analysis of the alternatives, and the cumulative effects analysis.

**Alaska Department of Transportation and Public Facilities – Juneau Access Improvements Supplemental EIS, 2003-2004.** Mr. Kleinleder was the lead author for three technical reports regarding the direct effects of the highway/marine ferry alternatives on Steller sea lions, bald eagles, and wildlife. These reports discuss relevant research, consultation, and jurisdictional responsibilities of federal and state wildlife and land management agencies. Mr. Kleinleder was also the lead author for the Indirect and Cumulative Effects analyses for these species.

**National Marine Fisheries Service – Bering Sea/Aleutian Islands King and Tanner Crab Fisheries Rationalization Plan EIS, 2003.** Mr. Kleinleder wrote the cumulative effects sections of this EIS involving seabirds, marine mammals, water quality, the ecosystem, and benthic communities.

**Alaska Department of Transportation – Kenai River Bridge Access Road Pedestrian Pathway EA, 2002.** Mr. Kleinleder designed and conducted a field survey to measure bird disturbance in relation to potential pedestrian traffic across the Kenai River Flats during spring



migration. He also analyzed the data and authored the report for this topic that was a matter of public and wildlife agency concern.

**British Petroleum, Inc. – Environmental Impact Field Study Design, Shah Deniz Pipeline, 2001.** Mr. Kleinleder designed bird survey methodology for the Shah Deniz Gas/Oil Pipeline project in the Republic of Georgia. The methodology was designed to measure bird use of a particularly sensitive wetland and surrounding areas. He also drafted a proposal to use satellite telemetry to study brown bear movement patterns in relation to the pipeline right-of-way.

**U.S. Department of Agriculture, Rural Utility Service - Southern Intertie EIS, 2001.** Mr. Kleinleder co-authored the wildlife cumulative effects section for the Southern Intertie Project EIS on the Kenai Peninsula.

**Alaska Gas Pipeline Project Team – Federal Energy Regulatory Commission Application for a Natural Gas Pipeline, Alaska Highway Route, 2001.** Mr. Kleinleder served as field team leader and report author for a study on Dall sheep lambing and mineral lick use in the Atigun Pass area, Brooks Range, Alaska.

**U.S. Forest Service – Resource Reports for Kosciusko and Tuxekan Timber Sales, 2001.** Mr. Kleinleder compiled pertinent information on local wildlife resources and applicable restrictions on logging activities based on the Tongass National Forest Land and Resource Management Plan.



## Dannielle M. Kline

*Wetland Ecologist*

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### Overview

Ms. Kline is a biologist with more than seven years of experience that includes wetland delineation, wetland functional assessment, habitat assessment and inventory, vascular/ non-vascular plant surveys, and plant selection and installation for restoration projects.

### Project Specific Experience

#### Wetlands

**Biologist, Bradwood Landing Liquefied Natural Gas Terminal, Columbia and Clatsop County, Oregon and Cowlitz County, Washington, Feb. 2006-Present:**

- Power Line & Access Roads Delineation
- Pipeline Delineation, Oregon
- Pipeline Delineation, Washington
- Clifton Road & Proposed Soil Storage Site Delineation
- Middle Svensen Island Mitigation Site

Conducted field studies and assisted with preparation of multiple reports supporting Oregon's Joint Permit Application (JPA) and Washington's Joint Aquatic Resource Permit Application (JARPA). Performed wetland delineations and prepared delineation reports. Evaluated wetland function and prepared functional assessment report for Washington section of pipeline. Conducted rare plant surveys. Contacted property owners to coordinate field site visits and maintained on-going property owner database. Managed subconsultants, collected, organized, and managed data collected in the field. Provided QA/QC of GIS figures prepared for reports.

**Biologist, Chevron San Antonio Pipeline Relocation Project, Alameda County, California, July 2007-August 2007:** Acted as an on-site environmental inspector to enforce environmental BMPs during construction of a 7.0-mile pipeline segment. Evaluated project area for signs of protected species, including California red-legged frog, California tiger salamander, San Joaquin kit fox, and callippe silverspot butterfly. Monitored active raptor nests for evidence of harassment.

**Biologist, Oregon Resources Corporation Heavy Mineral Sands Project, Coos Bay, Oregon, February-August 2007:** Conducted field studies and assisted with preparation of Oregon JPA. Performed wetland delineation, functions assessment, and biological surveys for 250-acre project area. Assisted in writing conceptual mitigation plan for project.

**Biologist, Wetland Delineation and Functional Assessment, Washington County Commuter Rail, Washington County, OR 2006:** Performed wetland delineation and functional assessment for an amended construction design for Washington County Commuter Rail.

### Areas of Expertise

Wetland Delineation

Wetland Rating and Functional Assessment

Pacific and Inland Northwest  
Botanical Surveys: Vascular and Non-vascular Plants

Plant Identification and Monitoring

Restoration Ecology

### Years of Experience

With URS: 2 years

Prior experience: 5 years

### Education

BS/Botany/1994/University of Washington

Postgraduate studies in Wetland Science/2005/Evergreen State College



**Dannielle M. Kline**

**Biologist, Wetland Delineation and Functional Assessment, West Field Mine Expansion, TransAlta Centralia Mining, Lewis County, Washington, 2005-2006:** Performed wetland delineation supporting permit application for a proposed coal mine expansion project. Rated wetland function using Department of Ecology's Revised Washington State Wetland Rating System and Methods for Assessing Wetland Functions.

**Biologist, City of Aberdeen Seaport Property Remediation Project, Gray's County, Washington, 2002:** Performed wetland determination at 200-acre historic landfill in support of permitting activities for remediation work.

### **Biological Surveys/Ecological Assessments and Monitoring**

**Botanist, Bradwood Landing Botanical Survey, Columbia and Clatsop County, Oregon and Cowlitz County, Washington, 2006 & 2007:** Conducted habitat assessment and botanical surveys supporting removal-fill permit application for liquefied natural gas pipeline in Oregon and Washington.

**Biologist, Georgia-Pacific (GP) Vegetation Clearing Impact Analysis, Toledo, OR , 2006:** Conducted habitat assessment and prepared technical memo evaluating potential environmental impacts associated with vegetation clearing over a section of the GP treated effluent pipeline. Project directly resulted in client receiving permit for clearing.

**Botanist, Rare Plant/Noxious Weed Survey, US26: Langensen Rd. to Brightwood Loop Highway Improvement Project, Clackamas County, Oregon, 2006:** Conducted vascular and non-vascular special-status plant survey throughout an area proposed for widening.

**Botanist, Rare Plant/Noxious Weed Survey, US26: Wemme to E. Lolo Pass Rd. Highway Improvement Project, Clackamas County, Oregon, 2006:** Conducted vascular plant survey throughout an area proposed for widening.

**Biologist, Beaver Creek Habitat Restoration, Troutdale, OR , 2006:** Performed vegetation surveys and prepared riparian vegetation technical memo in support of a SOLV bioengineering and habitat restoration project on Lower Beaver Creek in Troutdale. Flagged and GPS-surveyed ordinary high water of Beaver Creek.

### **Restoration Ecology/Installation**

**Nursery Manager/Restoration Plant Specialist, Sound Native Plants, Olympia, WA, 2001-2004:**



**Dannielle M. Kline**

Managed nursery operations for a small native plant nursery. Propagated (seed, cuttings) native plants for restoration plantings. Oversaw plant installations, including such tasks as supervising crew, meeting plant specifications, plant placement, and installation of plant protectors and weed barrier. Designed and installed temporary irrigation systems.

### **Specialized Training**

Advanced Wetland Soils and Hydrology for Delineators (PSU)

Wetland Ecology and Management (Evergreen State College)

PNW Plant Identification (Forest Service Training)

Non-vascular Plant Identification (University of Washington workshop)

### **Chronology**

2006-Present: Wetland Ecologist, URS Corporation, Portland, OR

2005-2006: Wetland Biologist, Jones & Stokes, Portland, OR

2001-2004: Nursery Operations Manager, Sound Native Plants/Sound Ecological Services, Olympia, WA

2000-2001: Field Biologist, USDA Forest Service, PNW Research Station, Olympia, WA

1995-1998: Field Biologist, University of Washington, DEMO Project, Gifford Pinchot National Forest (seasonal)

1997: Field Biologist, David Evans and Associates, Gifford Pinchot National Forest (seasonal)

### **Contact Information**

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## Eric Klein

*Environmental Scientist/GIS Specialist*

### Key Skills

Environmental Science/Biology  
Project Management  
NEPA implementation and documentation  
Wetland delineation  
Biological surveys  
Presentation of graphics and digital cartography  
GIS/GPS  
Research/Database management and analysis

### Years of Experience

With URS. 4 Years  
With Other Firms. 2 Years

### Education

M.S., 2004, Environmental Science-Biology Emphasis, Alaska Pacific University-Anchorage, AK-  
Thesis. *Wetland Drying and Succession Across the Kenai Peninsula Lowlands, South Central Alaska.*  
B.A., 2000, Political Science, University of Puget Sound-Tacoma, WA

### Certifications/Affiliations

Certified Project Manager  
ACE Wetland Delineation Training  
40-Hour Hazwoper  
8-Hour Hazwoper Refresher  
8-Hour Hazwoper Supervisor  
FEMA Community Relations  
FEMA Incident Command System  
CDL  
Wildland Firefighter (II)  
ADEC Qualified Person  
First Aid Certification w/AED  
CPR  
How to Manage the NEPA Process  
Learn To Return Safety Training  
Confined Space Training  
Ecological Society of America  
Alaska Arc User Group  
Urban and Regional Information Systems Association

### Overview

Mr. Klein has a background in biological research, field work, report writing, data investigation, and GIS analysis. Much of his work prior to joining URS was with the U.S. Fish and Wildlife Service in Alaska. Past research has focused on wetland and vegetation succession, as well as other ecosystem interactions. Mr. Klein has performed various tasks at URS, including biological field research, geospatial analyses, data investigation, community outreach, map creation, permitting, environmental impact investigation, report writing, and project management.

### Project Specific Experience

**Integrated Concepts & Research Corporation (ICRC), Application for 2008 Incidental Harassment Authorization. *Biologist/GIS Specialist.*** The Port of Anchorage (POA) is upgrading and expanding their facilities. Subsequently, the POA has requested authorization for the incidental take of marine mammals during construction activities associated with improvements. Assisted with calculation of estimated take for marine mammals (including beluga whales). This calculation primarily included data review, geospatial and mathematical analyses, and creation of figures representing potential takes.

**Integrated Concepts & Research Corporation (ICRC), Fish Study Plan for Phase II Construction Activities. *Biologist.*** The Port of Anchorage (POA) is upgrading and expanding their facilities. Subsequently, the POA is investigating into the potential impacts of vibratory and impact pile driving activities on Cook Inlet salmonids and other fish species, as well as potential mitigation and monitoring. Authored various sections including both ecology and importance of fish in Knik Arm.

**Chevron Pipe Line Company (CPL), Pipeline Maintenance. *Lead Environmental Monitor.*** URS assisted CPL with pipeline maintenance at BAPL MP 70.2-Arroyo Mocho Creek, California. Section of pipe wall with metal loss, which was located under the bed of Arroyo Mocho creek, was excavated, repaired, and the site was returned in kind to its prior state. Performed biological monitoring (with emphasis on three federally listed species, both aquatic and terrestrial). Maintained project compliance with all pertinent permit stipulations and coordinated with relevant agencies to accommodate changes.

**Victory Nickel Baseline Environmental Field Studies. *Biologist.*** URS assisted Victory Nickel with completion of baseline environmental studies for two potential mines site in remote areas of Northern Manitoba, Canada. Developed work plan for vegetation/wetland assessment and mapping field studies. Performed biological field studies to collect data for vegetation/wetland mapping, including vegetation sampling to analyze potential heavy metal uptake by plants.





Assisted with field studies to collect wildlife and fisheries data. Authored vegetation technical report, incorporating the Canadian Vegetation Classification System and statistical summary of baseline levels of heavy metals.

**Municipality of Anchorage (MOA) Water and Wastewater Utility (AWWU) Sand Lake (Anchorage) Wetland Assessment. *Project Manager/Biologist/GIS Specialist.*** AWWU is proposing to update a water transmission main in an area east of Sand Lake. Responsible for client interaction, project management, data collection, wetland field delineation, and Preliminary Jurisdictional Determination (PJD) report. The wetland PJD report included description of wetland composition, potential mitigation, wetland functions and values, field data, geospatial wetland impact analysis, and wetland location map.

**Temple-Inland Company. *Environmental Assessor.*** Temple-Inland reviewed historic aerial photos (earliest from the 1950's) totaling almost 1.5 million acres in Texas, Louisiana, Alabama, and Georgia. These photos were analyzed for areas of potential environmental concern, prior to divestment. Analyzed historic aerial photos for potential areas of environmental concern.

**National Park Service (NPS) Denali Park and Preserve EA. *Biologist.*** NPS is proposing to rehabilitate and reroute sections of the park road from MP 4.0 to MP 4.5 in Denali National Park. Authored the vegetation and wetlands sections in the biologic environment portion of the Environmental Assessment.

**The Boutet Company-Heritage Land Bank (HLB) Girdwood Wetlands Delineation. *Project Manager/Biologist/GIS Specialist.*** HLB is proposing to construct a subdivision area east of Crow Creek Road, west of Glacier Creek, and north of Girdwood Elementary School. This project is happening in coordination with the AWWU Girdwood waterline assessment. Responsible for project initiation, client interaction, and management. Performed an initial wetland possibility assessment for the proposed project area, based on aerial photo interpretation, geospatial analysis, and literature review. Initial review was followed by wetland field delineation, data collection, and Preliminary Jurisdictional Determination.

**National Marine Fisheries Service (NMFS) Spinner Dolphin EIS. *Public Comment Analyst.*** NMFS wrote an EIS to address proposed management measures to limit human interaction with spinner dolphins throughout the Hawaiian Islands. Reviewed and summarized public comments pertaining to biological and habitat issues.

**National Marine Fisheries Service (NMFS) Alaska Groundfish Fisheries Programmatic EIS- Ch 3 Update. *Deputy Project Manager/Biologist.*** NMFS is updating chapter 3, Affected Environment, of the EIS to incorporate relevant new data and information. Authored updates for various sections including prohibited species (i.e., Pacific salmon, halibut, and herring) and sea otters, as well as an executive summary. Assisted with project management and client interaction duties.

**National Park Service (NPS) Katmai National Park and Preserve EA. *Task Manager/Biologist.*** NPS proposed to remove and relocate maintenance and housing facilities from the Brooks Lake and Brooks Camp areas of Katmai National Park to a new location within the park. Managed task order under an existing IDIQ with the NPS, which entailed project initiation, client interaction, and management. Managed the writing of an Environmental Assessment and authored the biological and physical environment sections.

**United States Forest Service (USFS) Salt Chuck and Omar Creek. *Field Scientist.*** URS assisted the USFS in conducting an Engineering Evaluation/Cost Analysis for mine reclamation and remediation for closed mines in the Salt Chuck Bay and Omar Creek areas on Prince of Wales Island in southeast Alaska. Assisted with the collection and coordination of tissue (clams), water, and sediment field samples.

**Integrated Concepts & Research Corporation (ICRC)-Port of Anchorage (POA) Triangle Lake Trail Wetlands. *Project Manager/Biologist/GIS Specialist.*** The POA constructed a trail to connect Triangle Lake to Fish Lake because access had been cut off due to the construction of a haul road connecting the POA to a materials pit. Responsible for client interaction, project management, data collection, wetland field delineation, and Preliminary Jurisdictional Determination (PJD) report. The wetland PJD report included description of wetland composition, potential mitigation, wetland functions and values, field data, geospatial wetland impact analysis, and wetland location map.



**Municipality of Anchorage (MOA) Water and Wastewater Utility (AWWU) Girdwood Wetland Assessment. *Deputy Project Manager/Biologist/GIS Specialist.*** AWWU is proposing to install a water transmission main in a potential subdivision area east of Crow Creek Road, west of Glacier Creek., and north of Girdwood Elementary School. Responsible for client interaction, project management, data collection, wetland field delineation, and Preliminary Jurisdictional Determination (PJD) report.

**Municipality of Anchorage (MOA) Water and Wastewater Utility (AWWU) Hiland Road EA. *Project Manager/Biologist/GIS Specialist.*** AWWU proposed to install a water transmission main from the Eklutna Transmission Main to the Glenn Highway right-of-way. Responsible for client interaction and project management, the writing of an Environmental Assessment, and coordinating cooperating and lead agency review and concurrence. Also collected data, performed wetland field delineation, and wrote Preliminary Jurisdictional Determination (PJD) report.

**ICRC-Port of Anchorage (POA) Haul Road Wetland Assessment/Delineation. *Deputy Project Manager/Biologist/GIS Specialist.*** POA constructed a haul road to connect material pits on Elmendorf Air Force base, which will be used for the POA expansion project. Responsible for client interaction, project management, data collection, wetland field delineation, and Preliminary Jurisdictional Determination (PJD) report.

**Alaska Railroad Corporation (ARRC) Anchorage to Eagle River Line Change. *Environmental Site Officer.*** ARRC constructed a grade-separated crossing at Milepost 122.7 as part of the Otter Lake Road crossing improvements associated with the Anchorage to Eagle River track realignment project. Responsible for ensuring compliance with environmental permits such as storm water, Section 404, and SPCC. Represented ARRC and worked with contractors to ensure that Best Management Practices were both implemented and effective at controlling pollutants.

**Confederated Tribes of Coos, Lower Umpqua, and Suislaw Indians (CTCLUSI) Hazard Mitigation Plan. *Author/Reviewer.*** URS prepared a Standard State Mitigation Plan that guided the Tribe toward greater disaster resistance in full accord with the character and needs of the community and Federal requirements. Authored sections of the Hazard Mitigation Plan for Coastal Erosion and Wildland Fire and reviewed GIS-based wildland fire risk potential model.

**Chevron Environmental Management Company - Former Chevron Kenai Refinery Groundwater Remedy Field Evaluation. *Field Scientist.*** URS worked with ChevronTexaco to revise and/or implement a new groundwater remediation system on the former Chevron Kenai Refinery site in Nikiski, Alaska. Responsible for instrument calibration, groundwater sampling, and assisting with sample control including packaging analytical samples for shipment.

**National Marine Fisheries Service (NMFS) Steller Sea Lion and Northern Fur Seal Research Grants EIS. *Biologist.*** NMFS EIS to address alternatives and impacts for Steller Sea Lion and Northern Fur Seal research, involving Alaska, Washington, Oregon, and California. Authored the sections of the EIS concerning Steller Sea Lions and Other Marine Mammals

**Chugach Electric-Fire Island Line Extension and Wind Power and Transmission Line Feasibility Study. *GIS Specialist/Document Reviewer.*** Chugach Electric is studying the feasibility of a concept plan to connect facilities on Fire Island to the electric grid and build a wind power project on Fire Island. Performed geospatial data analyses and created GIS maps depicting various alternatives and their relation to environmentally sensitive areas. Reviewed and edited sections of the environmental report, such as the affected environment and environmental consequences pertaining to the biological resources of vegetation and wildlife and birds

**Federal Emergency Management Agency (FEMA), Hurricane Response & Recovery. *GIS Specialist/Field Scientist.*** Collected high-water marks for delineation of new flood plain maps and to generate a predictive flood event model. Created GIS data and field maps for the Hurricane Katrina affected area of the Gulf Coast. Analyzed areas impacted by Hurricane Katrina in Alabama, Mississippi, and Louisiana for evidence of high water marks. Collected field data at each high water mark, such as estimated storm surge height, and filled out requisite data sheets. Located FEMA hazard mitigation project and repetitive loss structures and assessed them for damage



**Alaska Railroad Corporation (ARRC) Eielson Branch Realignment EA, GIS Specialist/Public Involvement/Document Reviewer.** Created various field and document GIS maps, assisted in organizing and executing public involvement, and helped review EA document sections, such as Wetlands and Other Waters of the U.S. Created and organized GIS data to produce maps and performed various geospatial analyses necessary for document sections. Assisted in public involvement through creation of necessities like newsletters, mailing lists, and display boards; as well as traveling to public meeting sites to help facilitate interaction.

**Knik Arm Bridge & Toll Authority (KABATA) EIS, Biologist.** Conducted field surveys of shorebirds at various locations within the Knik Arm region. Surveyed east and west shores of Knik Arm for birds (specifically shorebirds), recorded data, and assisted in writing weekly update reports. Authored sections of the cumulative effects analysis regarding terrestrial habitat and wetlands. Created GIS data, performed geospatial analyses, and produced maps. Assisted with writing USCOE wetlands and USCG bridges permits for KABTA.

**Bureau of Land Management (BLM) Ring of Fire (ROF) Resource Management Plan (RMP)/Environmental Impact Statement (EIS), GIS Specialist/Author.** Created maps, figures, and performed geo-spatial analyses for the RMP/EIS. Also wrote sections of the RMP/EIS, such as environmental consequences of the alternatives to soil resources, air quality, and climate. Created maps for analysis aspects including, but not limited to, wildlife, soils, climate zones, and ecoregions.

**Federal Emergency Management Agency (FEMA), Hurricane Response & Recovery, GIS Specialist.** Provided mapping and geo-spatial analyses for FEMA Region III (various disaster declarations, most of which were precipitated by Hurricane Ivan). Created GIS products for the states of West Virginia, Virginia, and Pennsylvania, while working in the Disaster Field Office in Charleston, West Virginia. Products ranged from Teleregistration Maps to Flood Crest Analyses. Worked with various agencies including, but not limited to Pennsylvania Emergency Management Agency, USACE and USGS to gather data and collaborate on some projects. Created a Standard Operating Procedure and helped to implement a GIS department for FEMA Region III GIS.

**Federal Emergency Management Agency (FEMA), Hurricane Response & Recovery, Community Relations Specialist/Deputy Area Manager.** Provided Community Relations services to hurricane victims in Florida regarding 2004 hurricane season. Went through neighborhoods to assist individuals with various immediate/special needs (i.e., loss of power or broken generators). Also provided individuals with necessary information to make use of FEMA assistance. As a deputy area manager, coordinated and managed the use of field teams, compiled data, and wrote reports representing the status of multiple counties.

**National Park Service (NPS) South Denali Implementation Plan and EIS, GIS Specialist/Biologist.** The National Park Service, in conjunction with Alaska State Parks, went through the NEPA process for the creation of a new visitor center and access road for the Southern Denali area. Performed field analysis consisting of vegetation classifications and species' inventories along two proposed alignments. Completed wetland delineation, anadromous stream location and verification, and water quality analysis. Assisted with the writing of wetlands and vegetation technical reports and EIS sections. Also performed pertinent GIS mapping, geospatial analyses, and GPS field data collection.

**Alaska Department of Environmental Conservation, Source Water Assessments, GIS Specialist.** ADEC evaluated potential environmental risks to federally regulated public water system (PWS) sources throughout the state. This included an evaluation of individual Class A and Class B surface and groundwater systems to determine the potential for contamination of these drinking water sources. Assisted with confirmation of PWS well or surface water locations, existing data review of water system, establishment of time-of-travel protection areas for groundwater and surface water sources in GIS. Also assisted with the identification of existing and potential sources of six contaminant categories (bacteria and viruses; nitrates and/or nitrites; VOC's; Heavy metals, cyanide, and other inorganic chemicals; Synthetic Organic Chemicals; and Other Organic Chemicals) within the protection areas for both ground and surface water sources. Incorporated these geospatial data into GIS maps and databases. Determined the natural susceptibility and vulnerability of the PWS and prepared reports for the PWS operator, local libraries and ADEC. Also performed QA/QC in the field at various well locations.

## Publications

Klein, E., Berg, E., and Dial, R. Wetland drying and succession across the Kenai Peninsula Lowlands, south-central Alaska. *Canadian Journal of Forest Research*, 35 (8). 1931-1941 (2005).

Klein, E., Berg, E., and Dial, R. Wetland drying and succession across the Kenai Peninsula Lowlands, south-central Alaska. Master's thesis. Alaska Pacific University. Anchorage, Alaska. 2004.

## Presentations

Klein, Eric. August, 2006. *Wetland Drying and Succession Across the Kenai Peninsula Lowlands, South Central Alaska*. ESRI 26<sup>th</sup> Annual International User's Conference, San Diego, California.

Klein, Eric. November, 2004. *Wetland Drying and Succession Across the Kenai Peninsula Lowlands, South Central Alaska*. Alaska GIS Day Conference, Anchorage, Alaska.

Klein, Eric. February, 2004. *Wetland Drying and Succession Across the Kenai Peninsula Lowlands, South Central Alaska*. U.S. Fish and Wildlife Service Annual Biology Forum, Kenai National Wildlife Refuge, Soldotna, Alaska.

**Biological Research Technician – U.S. Fish & Wildlife Service, Kenai National Wildlife Refuge.** Performed wetland research and analysis, as well as other biological research tasks.

Performed vegetation and wetland survey data collection

Preparation and analysis of a digital database

GIS and aerial photo analysis to quantify the loss of wetlands on the Kenai Peninsula.

**Graduate Teaching & Research Analyst, Alaska Pacific University.**

Performed various research and teaching tasks as a graduate student.

Assisted teaching students in Environmental Science and Ecology courses

Contributed to a canopy ecology research project, which consisted of counting and measuring various arthropods with a dissecting scope, as well as data entry and investigation.

Areas of Expertise	Terrestrial and Global Change Biology/Ecology Botanical Taxonomy Experimental Design and Management
Total Years of Experience	8
URS	1
Other Firms	7
Education	MS/2005/Ecology/San Diego State University BS/1997/Geology/Botany/California State Polytechnic University Wetland Delineation Training/2006/Wetland Training Institute Inc. Desert Tortoise Surveying, Monitoring, and Handling Techniques Workshop/2006/Desert Tortoise Council Fairy Shrimp of California Identification Course/2007/Mary Schug Belk CalTrans Stormwater Monitoring Program Training/2007/URS Corporation
Registration/Certification	N/A
Overview	Glen Kinoshita is a biologist and botanist for URS. He has a strong interest in the flora and fauna of southern California, participating in ecosystem research in southern California chaparral through San Diego State University and native plant surveys through the California Native Plant Society. He also has a strong background in terrestrial ecological research in the southern California and arctic Alaskan geographical regions focusing on the effects of global climate change. He has also participated in atmospheric research projects in Antarctica and paleobotanical research in late Miocene flora in the Los Angeles and San Bernardino counties of southern California. Mr. Kinoshita has since furthered his professional experiences to include rare and endangered invertebrate, bird, and reptile surveys, sub-meter global positioning systems and habitat restoration.
Project Experience	<p><b>Botanical and Ecological Projects</b></p> <p><b>SR-73 Pilot Program</b> Performed vegetation monitoring for highway stormwater bioretention basin and water sampling equipment installation and maintenance at sites along SR-73 in Orange County, CA. (2007-present)</p> <p><b>Marine Corps Base Camp Pendleton</b> Performed rare plant and vegetation surveys at sites near San Diego County, CA. (2007-present)</p> <p><b>Chino Valley Independent Fire District</b> Performed rare plant and vegetation mapping at FEMA sites in Chino Hills, CA. (2007-present)</p> <p><b>Quorum Property Consultants</b> Performed rare plant and animal survey in Rancho Mirage, CA. (2007-present)</p> <p><b>AUSRA</b> Performed blunt nosed leopard lizard surveys at site near Paso Robles, CA. (2007-present)</p>

**Stirling Energy Systems**

Performed rare plant and desert tortoise, and flat tailed horned lizard surveys at sites near Barstow, CA and El Centro, CA. (2007-present)

**Marine Corps Air Station Miramar**

Performed vegetation and rare plant surveys and assisted in native plant restoration at site near San Diego, CA. (2007-present)

**Gregory Canyon**

Performed surveys for arroyo toad and assisting in implementation of native habitat restoration near Pala, CA. (2006-present)

**San Elijo Hills**

Performed vegetation surveys and habitat restoration monitoring near San Marcos, CA. (2006-present)

**SANDAG 805**

Performed rare plant and bird surveys along 805 freeway in San Diego, CA (2006-present)

**Otay Land Company**

Performed rare plant and vegetation survey at location at San Diego, CA. (2006-present)

**Kearney Mesa Parcel**

Performed rare plant, vegetation, and fairy shrimp surveys at site in San Diego, CA. (2006-present)

**Point View Properties.**

Performed rare plant survey in a continuation of an existing monitoring program at Rancho Palos Verdes, CA. (2006-present)

**Dana Point Headlands**

Performed rare plant surveys, habitat and restoration monitoring, and construction monitoring at site in Dana Point, CA. (2006-present)

**Wind Implementation Monitoring Program**

Surveyed vegetation within wind energy program area at Palm Springs, CA. (2006-2007)

**Lakeside Land Company**

Performed vegetation surveys, habitat and restoration monitoring related to San Diego River floodway restoration project. (2006-present)

**Nobel Drive Preserve**

Performed rare plant and fairy shrimp survey in vernal pool location and performed wetland delineations in potential areas in San Diego, CA. (2006-present)

**Caspers Regional Park**

Performed rare plant and vegetation survey at FEMA construction project in



Orange County, CA. (2006-present)

### **Nursery Products**

Performed survey of rare plants at location near Barstow, CA (2006-2007)

### **Patterns and Controls of Temporal Variation in CO<sub>2</sub> Sequestration and Loss from Arctic Ecosystems**

Measured ecophysiological effects of simulated climate change on arctic tundra ecosystem near Barrow, AK. (1999-2001)

### **Atmospheric and Geophysical Projects**

#### **Atmospheric Research Observatory**

Served as station science technician at South Pole, Antarctica for the National Oceanic and Atmospheric Administration. (2003-2005)

### **Educational Projects**

#### **Partnerships Involving the Scientific Community in Elementary Schools.**

Participated in science outreach programs to introduce new curricula in K-6 classrooms in San Diego County. (2000-2003)

**Undergraduate Mentoring in Environmental Biology.** Mentored undergraduate environmental sciences students in ecological projects in Barrow, Alaska and San Diego, California. (2001-2003)

**Teachers Experiencing the Arctic and Antarctic.** Mentored a high school environmental science teacher on ecological projects in Barrow, Alaska. (2001-2003)

### **Paleontological Projects**

#### **San Bernardino County Museum.**

Sorted and catalogued paleobotanical specimens from excavations in Los Angeles, San Bernardino, and Riverside counties in southern California, determined geological and stratigraphic interpretations from museum collections. (1996-1997)

### **Field Science Experience**

Experimental design, point, plot, and transect vegetation surveys, ecosystem photosynthesis measurements, plant taxonomy, morphology, physiology, ecosystem micrometeorological measurements, vegetation mapping, GIS application with ArcView software and submeter GPS field usage with Trimble equipment. Biostatistical software experience with Systat and SAS packages.

### **Other Equipment and Scientific Research Experience**

Gas chromatography, Infrared gas analyzers, Campbell Scientific and other data acquisition systems, meteorological data acquisition systems, various small-scale hardware, electrical, and electronic diagnosis and repair, handling of compressed



	gases, helium research balloon launching, scientific sample shipping and inventory, electronic database maintenance, snow and atmospheric air sampling, logistical experience with US National Science Foundation support organizations.
Professional Associations	Ecological Society of America California Native Plant Society American Association for the Advancement of Science
Publications/Presentations/ Papers Presented	<p>Kinoshita, GY, WC Oechel, G Vourlitis, SJ Hastings, RC Zulueta. 2006. The Effects of Elevated Soil Temperature and Water Table Manipulation on Arctic Tundra Carbon Flux. In manuscript.</p> <p>Kinoshita, GY. 2002. PISCES: Partnerships Involving the Scientific Community in Elementary Schools. NSF GK-12, Washington DC.</p> <p>Kinoshita, GY. 2002. Affect of Three Seasons of Elevated Soil Temperature and Water Table Manipulation on the Coastal Arctic Tundra Ecosystem near Barrow, Alaska. NSF-LAII, Seattle, Washington.</p> <p>Kinoshita, GY. 2002. Results of Three Growing Seasons of Elevated Soil Temperature and Water Table Manipulation in the Arctic Tundra Ecosystem at Barrow, Alaska. poster at NSF-LAII, Salt Lake City, Utah.</p> <p>Kinoshita, GY. 2002. Current Ecosystem Research in Arctic Alaska. NSF-TEA, New Hampshire.</p> <p>Kinoshita, GY. 2002. An Elevated Soil Temperature and Water Table Manipulation in the Arctic Tundra Ecosystem at Barrow, Alaska. NSF-LAII, Victoria, British Columbia, Canada.</p> <p>Kinoshita, GY. 2002. An Elevated Soil Temperature and Water Table Manipulation in the Arctic Tundra Ecosystem at Barrow, Alaska. Ecological Society of America, Snowbird, Utah.</p> <p>Kinoshita, GY. 2002. Preliminary Results of an <i>in situ</i> Manipulation of Water Table and Elevated Soil Temperatures on the Arctic Coastal Tundra Ecosystem CO<sub>2</sub> Fluxes at Barrow, Alaska. NSF-LAII, Seattle, Washington.</p> <p>Kinoshita, GY. 2002. An Experiment to Determine the Effects of <i>in situ</i> Manipulation of Soil Moisture and Temperature on Net Ecosystem CO<sub>2</sub> Flux at Barrow, Alaska. Arctic Research Consortium of the United States, San Francisco, California.</p>
Professional History	<p>URS Corporation, Biologist, San Diego, California, 2006-present.</p> <p>National Oceanic and Atmospheric Administration, Physicist, Boulder, Colorado, 2003-2005.</p> <p>San Diego State University, Field Science Technician, San Diego, California, 1998-2003.</p>



## Julie Love

*Biologist*

### Areas of Expertise

- Restoration Planning, Implementation, and Monitoring (Coastal sage scrub, Riparian, Wetland, Grassland, Bioswales)
- Vegetation Surveys and Mapping
- Stream Monitoring (Algae and Water Quality)
- Wildlife Surveys
- Fish Relocation

### Years of Experience

With URS: 1.5 Year

With Other Firms: 4 Years

### Education

Master of Environmental Science and Management/2003/University of California, Santa Barbara

Bachelor of Science/Marine Biology/2000/University of California, Los Angeles

### Overview

Ms. Love's combined work experience and education provide a wide range of ecological training. She has over five years of experience working in the fields of habitat restoration, botany, stream and algae monitoring, marine biology, terrestrial wildlife, maintenance/construction, and ecosystem inventory, assessment, and monitoring. Ms. Love's position at URS involves vegetation surveys and mapping, habitat assessment, habitat restoration and monitoring, stream and algae monitoring, wildlife surveys, fish relocation, and database management.

### URS Specific Experience

#### Habitat Restoration

**Restoration Coordination, Santa Barbara Airport, CA.** Assisted in planning and implementing restoration for 65 acres of wetland, coastal sage scrub, and riparian habitats. Organized and implemented monitoring program consisting of point-intercept transect and quadrat data collection and maintenance monitoring. Managed and analyzed resulting data. Authored annual reports detailing restoration success. Organized native seed collection.

**Restoration Monitoring, Lake Casitas, CA.** Monitored restoration success of a 6 acre site that included native grassland, wetland, and riparian habitats. Authored monthly and annual reports detailing restoration success and maintenance activities.

**Restoration Planning, Ellwood, CA.** Assisted in planning and implementing restoration for 2 acres of grassland and vernal pool habitat. Organized and implemented monitoring program consisting of point-intercept transect data collection and maintenance monitoring. Managed and analyzed resulting data. Organized native seed collection.

#### Vegetation Surveys and Mapping

**Vegetation Mapping, City of Santa Barbara, CA.** Mapped vegetation types using the Holland Classification System throughout various parts of the City. Dominant vegetation types included oak woodland, riparian, and ruderal.

**Vegetation Mapping, Lake Casitas, CA.** Mapped vegetation types using the Holland Classification System throughout various parts of the lake and surrounding areas. Dominant vegetation types included freshwater marsh, oak and walnut woodland, grassland, and ruderal.

**Biological Resource Study, City of Santa Barbara, CA.** Mapped vegetation types using the Holland Classification System along a portion of Loma Alta Drive. Documented existing plant species and monitored for rare plant species. Developed mitigation measures for construction activities.



**Rare Plant Survey, Yucaipa, CA.** Performed rare plant survey in a riparian habitat and associated flood plain. Photographed and documented existing vegetation.

#### **Wildlife Surveys**

**Tidewater Goby and Fish Relocation, Santa Barbara Airport, CA.** 125 hours. Captured and relocated tidewater gobies and other fish species from Tecolotito and Carneros Creeks. Performed initial presence/absence protocol surveys for tidewater goby in all locations prior to relocation. Performed presence/absence protocol surveys for tidewater goby in all locations after relocation. Managed data collection and compilation. Coordinated preparation and post-project clean up of field gear.

**Tidewater Goby and Fish Relocation, City of Santa Barbara, CA.** 85 hours. Captured and relocated tidewater gobies and other fish species from Laguna Channel, Santa Barbara. Coordinated preparation and post-project clean up of field gear. Monitored construction activities to prevent impacts to tidewater goby.

**Desert Tortoise Survey, Mojave Desert, CA.** 40 hours. Performed survey to assess habitat quality for desert tortoise. Mapped, photographed, and cataloged habitat suitability and vegetation types.

**Blunt-Nosed Leopard Lizard Survey, California Valley, CA.** 24 hours. Performed protocol survey to assess habitat quality for Blunt-Nosed Leopard Lizard.

**California Red-legged Frog Habitat Survey, Santa Barbara, CA.** 8 hours. Performed survey to assess habitat quality for California red-legged frog in Winchester Canyon. Mapped, photographed, and cataloged habitat suitability and vegetation types.

#### **Stream Surveys**

**Algae Inventory Survey, Ventura River, CA.** Performed monthly algae surveys, collected water samples. Authored annual report detailing water quality conditions, algae and vegetation cover.

**Stormwater Sampling, Santa Barbara Airport, CA.** Organized stormwater and base flow sampling efforts for two creeks. Authored annual reports detailing water quality conditions.

#### **Project Specific Experience**

**Reserve Steward and Restoration Coordinator for Coal Oil Point Reserve, U.C. Santa Barbara.** Planned, implemented and monitored restoration efforts at a 160-acre reserve. Oversaw the native plant nursery - propagation and care of plants, collecting seeds and cuttings. Coordinated monthly community restoration workdays - planned restoration activities, taught volunteers restoration techniques, fostered ecosystem and environmental education, implemented set up and clean



up. Supervised interns on a weekly basis – coordinated schedules, trained them in restoration techniques, taught them native and non-native plant names. Operated and maintained machinery and tools - tree chipper, water tank, weed whacker, chainsaw, band saw, circular saw, hand saw, jigsaw, tool grinder. Maintained and fixed infrastructure, including fences, buildings, and water lines. Certified in pesticide application for the U.C. System. Assisted the Snowy Plover Docent Program as a chick monitor and docent on Sand's Beach, and as a supervisor for the abandoned egg nursery. Assisted with fish seining, classified and counted samples.

**Restoration Project Assistant for Land Trust for Santa Barbara County, Arroyo Hondo Preserve, Gaviota Coast, CA.** Planned, implemented and monitored restoration efforts at a 780-acre reserve. Coordinated and assisted monthly community restoration workdays - planned restoration activities, taught volunteers restoration techniques, implemented set up and clean up, fostered ecosystem and environmental education. Supervised interns on a weekly basis - trained them in restoration techniques, taught them native and non-native plant names, implemented set up and clean up. Maintained machinery and tools.

**Project Manager for Santa Barbara Audubon Society's Goleta Slough Habitat Enhancement Project, Goleta, CA.** Planned, implemented and monitored restoration efforts. Locations included Atascadero Creek, Tecolotito Creek, Goleta Slough, and private property throughout Goleta. Coordinated restoration workdays for volunteers and interns. Supervised activities such as non-native plant removal, native plant installation, and an extensive Pampas Grass removal project.

**Restoration Project Assistant for the Gas Company, Goleta Slough, Goleta, CA.** Assisted in planning, implementing, and maintaining restoration efforts at a restoration site along Tecolotito Creek. Main responsibilities included planning native plant layout, installing native plants and seeds, and maintaining the site by watering and removing non-native species. Coordinated and supervised restoration workdays for volunteers and interns.

**Student Researcher at the California Environmental Protection Agency, Sacramento, CA.** Established an Ecological Risk Assessment protocol for chemical, physical, and biological stressors on the fall-run chinook salmon in Secret Ravine. Constructed a conceptual model illustrating the sources, stressors and resulting ecological actions associated with the system. Acted as salmonid biology advisor to group members. Developed and implemented protocol for grain size distribution analysis of redds in Secret Ravine. Implemented water quality monitoring. Assembled and organized existing data relative to the project and created a database.

**Field Researcher for the Marine Biology Department, U.C. Los Angeles.** Conducted research at several locations, including Santa Cruz Island, the Hawaii Institute of Marine Biology, and the U.C. Davis Marine



Institute at Bodega Bay. Conducted avian, pinniped and cetacean counts. Performed bioassays, benthic surveys, and limiting nutrient experiments on algae. Observed shoreline crab effects on snail population dynamics in relation to the intertidal environment. Constructed and executed an individual experiment on the correlation between invasive algal growth and water circulation in Kaneohe Bay, Hawaii.

**Field Researcher for the Marine Botany Lab, U.C. Santa Barbara.**

Conducted research in several locations, including Port Hueneme, More Mesa Beach, and Santa Barbara. Assisted with macro-invertebrate benthic surveys, classified and counted samples. Assisted with fish seining, classified and counted samples. Induced and collected reproductive specimens from purple urchins to be used in water toxicity tests. Assisted in monitoring surf grass populations by collecting data. Assisted in monitoring intertidal larvae settlement surveys by collecting data and settlement plates.

**Professional Societies**

- Santa Barbara Audubon Society, Conservation Chair 2004-2007
- California Native Grass Association, Member 2007

**Specialized Training**

- Noxious Weed Seminar, Agricultural Commissioner's Office, June 2005
- Using Native Grasses and Graminoids in Restoration and Revegetation, California Native Grasslands Association Workshop, May 2007
- American Red Cross First Aid and CPR
- Pesticide application certification for the U.C. System, July 2004
- NAUI Scuba Certified and Research Diver Certified, June 1999

**Contact Information**

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Julie\_Love@urscorp.com

Areas of Expertise	<p>Project Management</p> <p>NEPA and CEQA Compliance</p> <p>Wetland/Water Quality Permitting</p> <p>Endangered Species Compliance/Biological Conservation</p> <p>Aquatic, Wetland, Marine, and Terrestrial Biology/Ecology</p> <p>Habitat Restoration</p> <p>Watershed Management</p>
Years of Experience	31
URS	17
Other Firms	14
Education	<p>PhD/1982/Zoology, Ecology/University of Oklahoma, Norman</p> <p>MS/1978/Zoology, Ecology/University of Oklahoma, Norman</p> <p>BS/1975/Biology/Youngstown State University, Youngstown, Ohio</p>
Registration/Certification	Certified Professional Wetland Scientist, No. 195
Overview	<p>Dr. Magdych is a Principal Scientist and senior manager at URS. He has successfully managed hundreds of projects over the past 25 years that have widely ranged in size and complexity relative to scope, budget, and technical issues. He is a senior regulatory compliance expert for wetland and water quality permitting, Endangered Species Act compliance, CEQA and NEPA compliance, and other environmental regulations. Dr. Magdych has a strong technical focus in aquatic, marine, and terrestrial ecology, including restoration and creation of wetland and terrestrial habitats. He has performed major environmental investigations and conducted ecological research in desert, temperate, subtropical, and tropical regions, including the United States, Mexico, Canada, Pacific Islands/Pacific Basin, and Caribbean.</p>
Project Experience	<p><b>Power Generation, Oil, Gas, Pipelines, Transmission Lines, Highways, Railroads, and Other Linear Projects</b></p> <p><b>Solar 1-6 Energy Stirling Energy Solar Power Project.</b> Managed California Energy Commission (EQ/A) and Bureau of Land Management NEPA compliance and permitting for development of approximately 27,000 acres of solar power facilities for up to approximately 2,700 mw of power electric generation. <b>(2008 – Present)</b></p> <p><b>SONGS Steam Generator Replacement Project Planning and Oversight.</b> Managed preparation of plans for the California Public Utilities Commission (CPUC) and provided senior oversight and guidance to SONGS related to project permitting, NEPA compliance, and compliance with CPUC requirements. <b>(2007-Present)</b></p> <p><b>Miramar ENPEX Power Plant Siting Feasibility Study.</b> Managed environmental review and siting of feasible locations for the Department of the Navy for a power plant that would be located on MCAS Miramar. <b>(2006)</b></p> <p><b>Duke South San Diego Bay Power Plant – New Energy Facility Biology and Feasibility Studies.</b> Managed initial studies to evaluate the feasibility of a new power plant adjacent to the existing South Bay Power Plant. This included review of potential pipeline routes for reclaimed water supply and brine disposal, and a</p>

potential HDD crossing of the Tijuana River and riparian zone. **(2005)**

**Interstate 805 Corridor Project.** Managed environmental and engineering tasks to add managed lanes, direct access ramps, and parking structures for HOV, BRT, and managed SOV transit along the I-805 corridor from the U.S. – Mexico border to I-5. Work performed for Caltrans and SANDAG under Transnet. **(2005-Present)**

**San Onofre Nuclear Generating Station (SONGS) Units 2 and 3 Steam Generator Replacement Project.** Managed preparation of a Proponent's Environmental Assessment for the California Public Utilities Commission, and participated in other aspects of project permitting, including NEPA compliance on Marine Corps Base Camp Pendleton and permitting through the California Coastal Commission. **(2003 to 2006)**

**SONGS Unit 1 Reactor Pressure Vessel Transport Project.** Managed preparation of a NEPA EA on Marine Corps Base Camp Pendleton and in other aspects of project permitting, including permitting through the California Coastal Commission. **(2002-2003)**

**Diablo Canyon Power Plant Steam Generator Replacement Project.** Directed preparation of a Proponent's Environmental Assessment for the California Public Utilities Commission and participated in other aspects of project permitting. Replacement of these steam generators at this nuclear power generation station is required for the power plant to meet its licensed duration of operation. **(2003 - 2005)**

**Caltrans Highway 76 Biological Surveys.** Managed surveys for southwestern willow flycatcher, least Bell's vireo, California gnatcatcher, arroyo toad, rare plants, and wetland delineation. **(2003-2004)**

**Gas Research Institute, Cumulative Effects Assessment for Gas Pipeline Projects.** Managed an evaluation of environmental regulations and state-of-the-art methods for cumulative effects assessment in the United States and Canada for pipeline projects. **(2001-2002)**

**EPRI, Evaluation of the Effects of Utility Road Crossings of Streams and Wetlands.** Managed evaluation of crossing issues and BMPs, and developed methods for BMP selection with a BMP manual This manual won an AEP award as Outstanding Environmental Resource Document in 2002. **(1999-2002)**

**Caltrans Playa Vista Route 1 Road Widening Project.** Managed wetland and coastal zone permitting studies for this project in areas of sensitive coastal wetlands. **(2002)**

**Carmel Valley Road Improvement Project.** Managed wetland and coastal zone permitting for improvements of Carmel Valley Road adjacent Los Peñasquitos Lagoon (coastal estuary) for the City of San Diego. **(2002)**

**Carlsbad Boulevard Realignment Study.** Managed evaluation, feasibility assessment, and preliminary siting for widening and realignment of Carlsbad Boulevard for the City of Carlsbad. **(1997)**

**San Diego Gas and Electric South San Diego Bay Horizontal Direction Drilling (HDD) Project.** Managed environmental evaluation of a proposed HDD project (greater than 3,000 feet) for burial of a transmission line. This project involved concerns for potentially hazardous materials, drilling muds, and effects on



sensitive biological receptors, such as eel grass beds. (2002)

**NRG Energy, Marine Mammal and Sea Turtle Incidental Take Permitting and NEPA Compliance.** For three coastal power plants in southern California. Evaluations of the potential take of sea turtles at NRG power plants at Encina (Cabillo), Huntington Beach and El Segundo, California were conducted. NEPA Environmental assessments were performed. (2000-2001)

**Union Pacific Railroad Environmental Sensitivity Training and Emergency Response.** Developed a detailed training program for railroad staff on sensitive environmental resources and regulations. Assisted with permitting for emergency maintenance activities including regulatory support and endangered species compliance. (1998-2001)

**Kinder Morgan Energy Partners, Section 404 Permit Compliance.** Assisted Kinder Morgan in obtaining approval for applying Section 404(f) exemptions for classes of maintenance activities on a national basis. Assisted in coordination with U.S. Army Corps of Engineers Headquarters in this approval process. Provided guidance on Section 404 permitting and application of Nationwide permits for various activities. (1998 to 2001)

**Riverside County River Road Bridge Project.** Managed Section 404 permitting and development of the Section 404(b)(1) alternatives assessment of the River Road Bridge Replacement project. This project involved the FHWA interagency Section 404 – NEPA coordination process. Performed wetland delineations and served as a senior advisor for general CEQA/NEPA and Endangered Species Act compliance. Coordinated with the FHWA, Caltrans, Corps, USFWS, CDFG, and several other agencies. (2000-2001)

**Riverside County De Portola Road Improvement Project.** Managed biological evaluations, Endangered Species Act compliance, and Section 404 permitting for improvements to De Portola Road, near Temecula, California. This project involved design considerations to avoid problems associated with this historic road that was constructed in proximity to a stream. (2001)

**City of Temecula Pala Road Evaluation.** Provided support in evaluating Section 404 and biological resource issues associated with Pala Road near Temecula, California. (2001)

**Gas Research Institute Wetland Revegetation Research Program.** Evaluated wetland revegetation techniques and goals within natural gas pipeline rights of way. Developed a functional assessment model to assist in determining appropriate techniques for revegetation. Provided liaison to state and federal agencies, including FERC, in review of the model. Tested application of the model at four GRI long-term study sites and developed data collection engine to support the model. Provided an update of the long-term monitoring program. This project won an AEP award as Outstanding Environmental Resource Document in 2001. (1998-2002)

**Otay Mesa Generating Company, Otay Mesa Power Generating Plant.** Managed biological resource assessments and prepared Biology and Water Resource Sections of the Application for Certification (EIR equivalent document). The project involved most biological issues found in the San Diego, California

region. Managed a state of the art study of Otay tarplant-soil relationships. This study won an AEP award of merit in 2000. Managed wetland permitting. **(1997-2001)**

**Santa Fe Pacific Pipeline Partners**, Benson to Willcox, Arizona pipeline reconstruction. Endangered Species Act compliance. **(1997)**

**Santa Fe Pacific Pipeline Partners**, Davis-Monthan AFB supply pipeline reconstruction. Endangered species Act Compliance. **(1997)**

**Santa Fe Pacific Pipeline Partners, Camp Pendleton Pipeline Permitting.** Environmental Assessment, Endangered Species Act compliance, wetland permitting. **(1997)**

**Santa Fe Pacific Pipeline Partners** Watson to Colton Pipeline. Biological review. **(1997)**

**Santa Fe Pacific Pipeline Company, Concord to Colton Gas Product Pipeline.** Wetland permitting, Endangered Species Act compliance, and CEQA/NEPA compliance for a 300-mile-long pipeline in central and southern California. **(1994-1995)**

**Iroquois Natural Gas Pipeline, Wetlands Assessment.** Assessment of the effects of 400 miles of pipeline constructed in eastern New York on wetlands. Expert witness regarding wetlands and wetland permitting. **(1994-1996)**

**Mojave Natural Gas Pipeline.** Section 404 and 1603 wetland permitting for a 600-mile-long pipeline in central California. **(1994)**

**San Diego Gas & Electric Company, South Bay Unit 3 Repowering.** California Energy Commission permitting for electric transmission lines and power plant upgrade. Managed environmental Application for Certification (EIR equivalent document) for this project involving marine (San Diego Bay) and terrestrial (transmission line) impacts. **(1993-1995)**

**Water Pipeline Permitting.** Permitting and compliance for numerous water pipelines and canals for a variety of water districts including Otay Water District, Rancho California Water District, and the Imperial Irrigation District. **(1991-Present)**

**Foothill Transportation Corridor, Orange County.** Managed biological surveys: a database of habitats and sensitive species was developed, and used in siting studies to minimize impacts on sensitive resources along the corridor route. All major habitat types common to coastal southern California were encountered. **(1988)**

**U.S. Air Force Ballistic Missile Office, Norton Air Force Base.** NEPA compliance and biological resource studies in support of railroad and highway deployment systems, and hardened intersite communications (HICs) underground cable systems. **(1985-1988)**

#### **Water Resources and Watershed Management Projects**

**Denver Water Department and Northern Colorado Water Conservancy District, Sulphur Gulch Reservoir, Grand Junction, Colorado.** Managed

project and provided expert witness testimony regarding the potential to obtain a Section 404 permit for a proposed water supply reservoir on the Colorado River. (2007)

**Color Spot Nursery, Fallbrook, California.** Managed design of irrigation/water management system to control offsite discharges, assisted in meeting water quality regulations designed wetland/stream restoration program, and assisted with facilities management plan. (2000-2002)

**Santa Margarita River Watershed Management Plan, Riverside County Flood Control District.** Investigations, modeling, and plan development to manage wetlands, riparian systems, and estuarine/lagoon systems that will be ultimately affected by urban development in the upper portions of the Santa Margarita River watershed. The lower and mid sections of the Santa Margarita River provide undisturbed, relatively pristine habitats that support numerous threatened and endangered species as well as diverse general wildlife populations. This study focused on flood flow and stormwater runoff management. (1996-1999)

**EIR for the San Diego River Land and Ocean Outfall for Treated Wastewater.** Project Manager. Major issues involved potential impacts on recreation and beneficial uses, water quality, marine and terrestrial biological resources, and public health. The outfall included 28,000 feet of tunnel, a single riser shaft, and two diffuser pipelines. (1991-1992)

**Bill Signs Trucking Company San Diego River Floodway Stabilization.** Section 404 and 1603 wetland permitting and CEQA compliance for a floodway restoration project in the San Diego River. Riparian restoration and river management. (1993-1994). Implemented riparian mitigation/restoration program and ongoing mitigation monitoring. (1994-2001)

**City of San Diego Tijuana River Floodway Protection Project.** Conducted planning feasibility studies involving wetlands permitting, Endangered Species Act compliance, and CEQA/NEPA compliance to identify alternatives to floodway restoration and protection. (1994-1995)

**Cajalco Creek Dam and Detention Basin Project, Metropolitan Water District of Southern California.** Section 404 permit and 1601 Stream Alteration Agreement. Willow riparian mitigation and federally endangered Stephens' kangaroo rat. (1993-1994)

**Yavapai Prescott Tribe watershed wetland planning.** Guidance on wetland restoration and management, and integrated watershed management. (1996)

**Rincon Indian Reservation Water and Wetland Management Project.** Developed a water management plan for the allotment of 3,000 acre-feet of water from Lake Henshaw. Wetland management, stormwater control, sand mining, permit streamlining plan, and the San Luis Rey River. This project was funded by the EPA. (1993-1994)

**Littlerock Dam Restoration Project, Littlerock Irrigation District, Palmdale Water District and U.S. Forest Service.** Section 404 permit and Section 1601 Stream Alteration Agreement. Riparian restoration. (1994)

**Padre Dam Municipal Water District.** CEQA compliance for water storage reservoirs. (1995)

**San Marcos Creek Flood Control Channel, City of San Marcos, California.** Public flood control channel. Section 404 permit and 1601 Stream Alteration agreement. Willow riparian and wet meadow mitigation; mitigation siting studies. (1988-1989)

**Wastewater Treatment Plant Expansion, City of Poway, California.** Ecological studies regarding a proposed basin plan amendment to allow livestream discharge of treated wastewater into Peñasquitos Creek. Stream/river and coastal lagoon management of proposed livestream discharges of treated wastewater to Peñasquitos Creek and Los Peñasquitos Lagoon from the proposed City of Poway Wastewater Reclamation facility. Studies involved investigations of hydrology, nutrient loading, salinity changes in the estuary, changes in biological communities, and impact avoidance. (1989-1990)

Stream/River Management of Livestream Discharges of Treated Wastewater to Malibu Creek from the Las Virgenes Municipal Water District's Tapia Wastewater Treatment Facilities. Studies involved vector control, nutrient loading, and instream-flow management. (1989)

**City of San Diego's Clean Water Program.** Planning regarding potential livestream discharges and facilities siting. (1991)

**Desalination Projects.** Investigations of the potential environmental effects and permitting of seawater desalination facilities in coastal southern California (various clients), and of brackish water desalination facilities in Oklahoma (Oklahoma Water Resources Board). (1980-1996)

**Wastewater Reuse.** Research on the potential beneficial uses of reclaimed wastewater (freshwater) in coastal streams and estuaries in Southern California. Regional management recommendations were developed. (1982-1985)

**General Compliance.** Biological surveys and CEQA compliance for water pipelines and water storage reservoirs, Otay Water District. Surveys for rare plants, California Gnatcatcher, and assessment of Diegan coastal sage scrub habitat and wetland permitting. Impact assessment and mitigation. (1991-1996)

#### **Residential/Commercial/Resort Development**

**U.S. vs. Chuchua.** Provided expert witness testimony regarding alleged violation of Section 404 of the Clean Water Act on and near the San Luis Rey River in California. I was deposed for this case. The case was settled prior to going to court. (2003)

**DKN Holdings, Murrieta, California.** Managed Section 401, 404, 1603, and Stormwater Permitting for this commercial development project. Developed BMPs under latest regulations for non-storm and storm flows. (2002)

**Santiago Estates Expert Support.** Provided and managed support for expert evaluation of the effects of unpermitted discharges to waters of the United States. Developed restoration plans. (2002)

**Lakeside Land Development Co.** San Diego River Improvement Project. Managed Section 404 permitting and Endangered Species Act compliance for a major floodplain restoration project on the San Diego River. (1998) Mitigation

monitoring. **(1999-Present)**

**Pepperdine University Clean Water Act Section 404 Compliance** Provided expert witness testimony, reporting, and deposition regarding an enforcement action for a sedimentation basin. **(1995)**

**ODC Resort Development, Koror State, Republic of Palau.** Hotel/tropical resort development. Section 404 permit with detailed environmental assessment. Reef flat, mangrove swamp, freshwater wetlands, agricultural wetlands, and sensitive species assessments and mitigation. Socioeconomic issues were an important component of the assessment. Evaluation and ecological prioritization of aquatic, wetland, and terrestrial habitat functions at the proposed site. Planning and design to retain and enhance primary ecological functions, and to operate the resort in a manner compatible with natural resource management goals. Identification of additional offsite mitigation plans. **(1990-1991)**

**Lonfit New Town Development, Guam.** Residential/hotel/golf resort. Site planning and design advice prior to Section 404 permitting. Phragmites wetlands, stream management, riparian wetlands, and downstream marine reef flats. Natural resources and open space planning to maintain anadromous fish habitat, riparian habitats, and coral reef flats. **(1990-1991)**

**Kealia Pond Studies, Island of Maui, Hawaii.** Hotel/resort development. Expert witness and planning/design advice regarding Section 404 permitting. Coastal lagoon/pond and wetland, and endangered species. Planning and design to enhance habitat and production for the federally endangered Hawaiian stilt and Hawaiian coot in coastal ponds/lagoons (Maui, Hawaii). Investigations involved habitat design compatible with golf/resort development to maximize habitat for both species, as well as multiple-species habitat enhancement. **(1991)**

**Whelan Estate, Oceanside, California.** Residential development. Expert witness regarding Section 404 permitting and 1603 Stream Alteration agreements. Willow riparian wetlands, San Luis Rey River, and least Bell's vireo. **(1991)**

**Eagle Crest Development, Escondido, California.** Residential/golf resort development. Section 404 permit, Section 7 consultation, and 1603 Stream Alteration agreement. Willow riparian mitigation and federally endangered least Bell's vireo. Design of wetland restoration plan, implementation, and monitoring program. **(1988-1989)**

**Walker Basin Development, Temecula, California.** Residential development and golf resort. Section 404 permit and 1603 Stream Alteration agreement. Willow riparian wetlands, oak riparian habitat, and wet meadow wetlands. **(1989)**

**Assessments for Projects in the Los Angeles County Significant Ecological Areas (SEAs).** SEAs were created as mitigation for the Los Angeles County General Plan. SEAs include a variety of sensitive biological habitats and sensitive species. Development projects are allowed in SEAs providing they pass the review of the Significant Ecological Area Technical Advisory Committee (SEATAC) which is composed of biological communities onsite. Impact assessments and mitigation design must include consideration of multiple-species complexes. Projects included Brea/Tonner Canyon, Agoura Hills, and Malibu Beach SEAs. **(1988-1991)**

**Disaster Response/Oil Spill Response**

**FEMA Hazard Mitigation Grant Program.** Managed environmental review including preparation of Environmental Assessments, Section 7 consultation, Section 106 compliance, and wetland delineation. Over 50 projects involving infrastructure repairs and improvements, dams, stormwater management, and vegetation management (prescribed burns and physical control). **(1997-1998)**

**FEMA, DR 932-MH, Hazard Mitigation Project.** Managed preliminary engineering and environmental design for a seawall at the SDI/Co-op Schools properties on Majuro, Republic of the Marshall Islands. **(1998)**

FEMA, DR 927-AS and DR 961-HI, Disaster Response, Typhoon/Hurricane Disasters. Served as environmental liaison for NEPA/environmental compliance. **(1997-1998)**

Environmental Assessments prepared and related investigations:

- Environmental Assessment for the County of Kauai Housing Agency Ho'omalulu (Blue Sky Hawaii) project. Hurricane Iniki.
- Environmental Review for the proposed Keonopoko iki Deep Well project in a volcanic hazard zone, County of Hawaii.
- Environmental Review for repair of overhead transmission lines damaged by Typhoon Val on American Samoa.
- Environmental Assessment for the new Tafuna High School, American Samoa. Typhoon Val.
- Environmental Assessment for the new Department of Public Works, Maintenance and Operations facility, American Samoa. Typhoon Val.
- Environmental Assessment for the American Samoa Petroleum Cooperative, Tank farm, Phase II, Hardening project. Typhoon Val.

**FEMA, DR 1044-CA and DR 1046-CA, Disaster Response,** Flooding Disasters. Served as environmental liaison for NEPA/environmental compliance. **(1997-1998)**

**FEMA, DR 1148-NY, Albany, New York, Disaster Response.** Flooding Disaster. Served as NRCS coordinator regarding resolution of overlap between NRCS and FEMA Funding programs. **(1997)**

**FEMA, DR 1163-KY, Lexington, Kentucky, Disaster Response.** Flooding disaster. Served as environmental liaison for NEPA compliance and 8-step floodplain analysis. **(1997)**

**FEMA, VI-DR-1067, Hurricane Marilyn Disaster Response, St. Thomas, U.S. Virgin Islands.** Managed environmental compliance and clearance activities for FEMA-related activities in response to damage from Hurricane Marilyn on St. Thomas, St. John, and St. Croix. **(1995-2000)**

Major projects included:

- **Prepared revegetation plan for an 8.5-acre site within the coastal zone.** Revegetation goals included establishment of dry woodland communities. The project was implemented and met goals for success criteria designated in the Plan.



- Environmental Assessment for temporary emergency shelters (prefabricated housing) at Estate Nazareth (Red Hook) and Estate Ross (Charlotte Amalie). Issues included endangered species, wetlands, sewage treatment, coastal zone, nearshore marine and socio-economic impacts (with strong NIMBY considerations).
- **Expert witness and litigation expert for two cases on behalf of FEMA.** Both cases involved project opposition by local concerns, and included alleged violations of NEPA, the Clean Water Act, and the Federal Endangered Species Act. Evaluation of project alternatives and the regulatory compliance process were key issues. The plaintiffs' cases were proven to be without merit and FEMA prevailed on both cases. Provided court testimony for both cases.
- **Bovoni Landfill restoration.** The landfill was operated out of compliance before the hurricane. Special memoranda of agreement were developed to allow hurricane-related response activities to proceed. Project activities included segregation of medical wastes and toxins, and air-curtain burning of wastes. Air-curtain incineration was applied at the hospital with a portable unit to avoid continued unregulated dumping of medical wastes at the landfill.

**Shell Major Area Oil Spill Drill, Morgan City, Louisiana.** Participated in a major area drill for response to a simulated oil spill in bayou wetlands near Morgan City, Louisiana. Shell Oil Company hosted our participation. **(1995)**

### **Mining**

**Confidential Southern California Sand Excavation/Habitat Restoration.** Expert witness regarding alleged violations of the Federal Clean Water Act associated with a confidential project regarding sand extraction and habitat restoration. **(2003-Present)**

**Confidential Sand Mine.** Section 404 permitting and Endangered Species Act compliance for a new sand mine in San Diego County. **(2000-Present)**

**Sloan Canyon Sand Mine Phases 1 and 2.** Permitting support for a new phase of the mine. Section 404 permitting and Endangered Species Act compliance (arroyo toad, California gnatcatcher, least Bell's vireo, and southwestern willow flycatcher). **(2000-Present)**

**Sloan Canyon Sand Company Project.** Expert witness representing sand extraction company in an EPA Section 404 (wetland) enforcement investigation. Obtained final permits and approvals for a 180-acre sand mine. **(1992-1998)**

**Pala Mine, CalMat.** NEPA compliance, Endangered Species Act compliance, and wetland permitting. **(1995-1997)**

**Lakeside Project, CalMat.** Expert witness representing sand extraction company in a Corps Section 404 (wetland) enforcement investigation. **(1992-Present)**

**Robinson Gold Mine, Ely, Nevada.** NEPA compliance, Endangered Species Act compliance, and wetland permitting. **(1991-1992)**



**Other Public Facilities and Infrastructure**

**Gregory Canyon Landfill Permitting and Compliance.** Managed delineation of wetlands and other waters of the U.S., waters of the State, Streambed Alteration Agreement Compliance, Endangered Species Act Compliance, and supporting activities. **(2004 to present)**

**HMCS Yukon Artificial Reef Project, San Diego Oceans Foundation and the City of San Diego.** Managed preparation of the EIR and technical studies, and permitting for placement of the decommissioned Canadian Naval Destroyer, HMCS Yukon, on the sea floor off the coast of San Diego as a recreational dive site and artificial reef. The Yukon Project was permitted and the ship sunk approximately 1.85 offshore of Pacific Beach in San Diego, California, in June 2000. Permitting was complex because the project did not fit under several traditional permitting pathways. The project implemented state-of-the-art procedures for ship cleanup and preparation. CEQA compliance became the primary vehicle for ensuring environmental protection. The EIR was published on the Internet to increase its circulation. Coordinating agencies included the City of San Diego, NMFS, the California Coastal Commission, and the CDFG. Our services were provided to the non-profit San Diego Oceans Foundation. **(1999-2000).** This EIR won an AEP award of merit in 2000.

**Bovoni Landfill, Hurricane Marilyn Response, Federal Emergency Management Agency, St. Thomas, U.S. Virgin Islands.** Emergency response and environmental clearance for post-hurricane repairs and use. Issues included hazardous materials, medical wastes, landfill fire, and air-curtain incineration of debris from the hurricane. **(1995)**

**Mission Bay South Shores, City of San Diego, Parks and Recreation Department.** Park facilities development. Section 404 permit and Coastal Zone permit. Eelgrass and salt marsh/salt pan mitigation, and least Tern habitat enhancement. Hazardous material/landfill remediation. **(1993-1994)**

**Military/Defense Installations**

**Small ICBM and Peacekeeper (MX) ICBM Program, U.S. Air Force Ballistic Missile Office.** Projects in Arizona, Arkansas, California, Florida, Louisiana, Michigan, Missouri, Montana, Nevada, New Mexico, North Dakota, South Dakota, Texas, Utah, Washington, Wyoming, and Kwajalein. Defense program facilities. Section 404/404(r) permit coordination and Section 7 consultation. Sand dune/dune wetland restoration and mitigation, and federally endangered least Tern and unarmored three-spined stickleback assessments at Vandenberg AFB, California, various mitigation and compliance nationwide. Assessment of ecological functions and GIS-based multiple-objective decision analysis leading to site selection of defense agency installations. This work included coordination with the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, U.S. EPA, and State and local natural resource agencies. **(1985-1988)**

**Miramar Gun Club Land Lease.** Environmental Assessment on NAS Miramar, San Diego. **(1995)**

	<p><b>MCAGCC Twentynine Palms Firefighting Training Facility.</b> Environmental Assessment, endangered desert tortoise surveys, and evaluation of Mojave creosote bush scrub. Developed mitigation measures to avoid potential impacts on desert tortoise. <b>(1993)</b></p> <p><b><u>Research and Other Projects</u></b></p> <p>Basic Research in Stream, Lake, and Marine Habitats Regarding Ecosystem Function, and Resilience/Recovery of Such Habitats to Environmental Perturbation (e.g., saline stress). Investigations of instream flow, organism-substrate relationships, thermal influences, and tests of the river continuum concept. Projects were located in California, Ohio, Oklahoma, Pennsylvania, and Texas. Funding agencies included the National Science Foundation and NOAA. <b>(1972-1982)</b></p> <p>Modeled the Response of Multiple Species of Stream Insects to Chemical Variation Along a Stream Continuum in the Washita River, Oklahoma. Studies evaluated the effect of varying salinities on the normal aquatic community development that would be expected as a result of physical factors along fifty miles of stream. <b>(1978-1982)</b></p> <p><b>Modeled the Effects of Discharges of Freshwater in the Form of Treated Wastewater in Tijuana Estuary and San Diego River Estuary.</b> This study was performed to assess the beneficial uses of treated wastewater in stimulating multiple-species biological communities in Southern California estuaries. <b>(1982-1985)</b></p>
Professional Societies	<p>American Association for the Advancement of Science  Association of Wetland Managers  Association of Environmental Professionals  California Native Plant Society  Society of Wetland Scientists</p>
Honors/Awards	<p>2002 Local and 2003 Statewide AEP Outstanding Environmental Resource Document for the “EPRI Best Management Practices Manual for Access Road Crossings of Wetlands and Waterbodies”</p> <p>2001 AEP Outstanding Resource Management Document for “An Approach for Determining and Meeting Wetland Revegetation Goals in Pipeline Construction Rights of Way”</p> <p>2000 AEP Award of Merit for an Environmental Resource Document for the “Project Yukon EIR”</p> <p>2000 AEP Award of Merit for an Environmental Solution for the “Assessment of Otay Tarplant – Soil Relationships for the Otay Mesa Generating Project”</p> <p>2000 Commendation from San Diego Oceans Foundation for Significant Support and Contributions to Setting Standards for Environmental Review of Ships Prepared for Sinking as Artificial Reefs</p>

Professional History	<p>URS Corporation (URS acquired Woodward-Clyde Consultants), Principal Scientist and Environmental Permitting Manager, San Diego, California, 1998-Present.</p> <p>Woodward-Clyde Consultants, Manager of Environmental Planning, San Diego, California, 1991-1998.</p> <p>Michael Brandman Associates, Manager of Biological Services, Hawaii/San Diego, California, 1988-1991.</p> <p>Tetra Tech, Inc., Manager of Biological Resources, 1985-1988</p> <p>San Diego State University, Post Doctoral Research Associate, San Diego, California, 1982-1985.</p> <p>University of Oklahoma, Instructor and Research Associate, Norman, Oklahoma, 1976-1982.</p>
Countries and Territories Worked In	<p>American Samoa, Canada, Commonwealth of the Northern Mariana Islands, Guam, Mexico, Puerto Rico, Republic of Palau (Belau), Republic of the Marshall Islands, United States, and the U.S. Virgin Islands.</p>
Language Proficiency	<p>English</p>
Citizenship	<p>United States</p>
Publications/ Presentations/ Papers Presented	<p>Magdych, B. 2007. Puzzling Trends in the Regulation of Wetlands and Waters in California (Arid Southern California Focus). Society of Wetland Scientists Conference, Sacramento, CA. June 10-15, 2007.</p> <p>Magdych, B. and M. Moore. 2005. Comparison of Observed Ordinary High Water Marks to Flood Recurrence Frequency in Arid Southern California. Association of State Wetland Managers Joint State/Federal Wetland and Riparian Area Legal Workshop, Albuquerque, New Mexico, October 18-19, 2005.</p> <p>Magdych, B. and J. Pitt. 2004. Evaluation of Phantom Beneficial Uses in Ephemeral Waters in Southern California. Society of Wetland Scientists 25<sup>th</sup> Anniversary Conference, Seattle, Washington. July 18-23, 2004.</p> <p>Magdych, B. and C. Forrest. 2003. Best Management Practices (BMPs). Manual for Access Road Crossings of Wetlands and Water bodies. EPRI, Palo Alto, CA. Publication No. 1005188.</p> <p>Magdych, B., J. Burns, B. Lohstroh, and J. Rocks. 2002. Evaluation of Wetland Revegetation in Pipeline Rights-of-Way in Michigan and Field Verification of the GRI Wetland Evaluation Database. GRI-02/0116.</p> <p>Magdych, B., T. Antoniuk, K. Ellis, and D. Mutrie. 2002. Cumulative Effects Assessment for Gas Pipeline Projects. GRI-02/0104.</p> <p>Magdych, B. 2000. An Approach for Determining and Meeting Wetland Revegetation Goals in Pipeline Construction Rights-of-Way. GRI-00/0112.</p> <p>Magdych, B. 2000. Identifying Wetland Revegetation Goals in Pipeline Construction Rights-of-Way. A paper presented at the 7th International</p>

Symposium on Environmental Concerns in Rights-of-Way Management, September 11, 2000, Calgary, Alberta, Canada.

Magdych, B. 2000. Evaluating Right of Way Best Management Practices for Stream and Wetland Crossings: An Interactive Workshop. A workshop presented at the 7th International Symposium on Environmental Concerns in Rights-of-Way Management, September 11, 2000, Calgary, Alberta, Canada.

URS. 2000. Assessment of Otay Tarplant-Soil Relationships for the Otay Mesa Generating Project. Prepared for Otay Mesa Generating, L.L.C. by Bill Magdych, Dave Silverman, Jim Rocks, and Mike Hatch. Received AEP Award of merit for 2000.

Magdych, B. 2000. PowerPoint Presentations on CD for: 1) Setting Functional Goals for Wetland Revegetation in Pipeline Corridors, a workshop presented at the Society of Wetland Scientists Meeting, June 7, 1999, Norfolk, VA; and 2) Determining Wetland Revegetation Goals in Pipeline Construction Corridors, a paper and poster presented at the Association of State Wetland Managers Meeting, October 25-27, 1999, Annapolis, MD. GRI-00/0040.

Magdych, B., and J. Evans. 1999. Summary of GRI Programs Related to Clean Water Act Section 404 Permitting and Proposed Modifications to the Nationwide Permits. A White Paper prepared by GRI and submitted to the U.S. Army Corps of Engineers commenting on proposed revisions to the Section 404 Nationwide Permit Program.

Magdych, B. 1999. Summary and Evaluation of Literature Reviewed and the Results of the Outreach Program for Wetland Revegetation Practices on Pipeline Rights-of-Way. GRI

Magdych, W.P. 1995. Brackish Water Desalting Permitting/Regulatory Issues. Invited Speaker, American Desalting Association Conference, April 6, 1996, La Jolla, California.

Magdych, W.P. 1994. Constructed Wetlands — Cost Effective Techniques for the Treatment of Wastewater. Arizona - Sonora Commission, Tucson, Arizona.

Magdych, W.P. 1992. Foreign Development — Applying U.S. Wetland Policy in Pacific Basin Island Nations. INTECOL's IV International Wetland Conference, Columbus, Ohio.

Magdych, W.P. 1984. Salinity Stresses Along a Complex River Continuum: Effects on Mayfly (Ephemeroptera) Distributions. Ecology 65:1662-1672.

Zedler, J.B. and W.P. Magdych. 1984. Sedimentation and Estuarine Productivity: Research Activities for Management. Pages 113-128 in B.J. Copeland, K. Hart, N. Davis, and S. Friday, editors. Research for Managing the Nation's Estuaries, Proceedings of a Conference in Raleigh, North Carolina, UNC Sea Grant Publication 84-08, 420 pp.

- Zedler, J.B., W.R. Koenigs and P. Magdych. 1984. Freshwater Release and South California Wetlands. Technical Report No. 1: Streamflow for the San Diego and Tijuana Rivers. San Diego Association of Governments. 52 pp.
- Zedler, J.B., W.P. Magdych and R. Koenigs. 1984. Freshwater Release and Southern California Wetlands. Technical Report No. 2: Review of Salinity Effects and Predictions of Estuarine Responses to Lowered Salinity. San Diego Association of Governments. 74 pp.
- Magdych, W.P., and J.B. Zedler. 1984. Freshwater Release and Southern California Wetlands. Management Plan for the Beneficial use of Treated Wastewater in the Tijuana River and San Diego River Estuaries. San Diego Association of Governments. 74 pp.
- Magdych, W.P. 1979. The Microdistribution of Mayflies (Ephemeroptera) in Myriophyllum Beds in Pennington Creek, Johnston Co., Oklahoma. *Hydrobiologia* 66:161-175.
- Magdych, W.P. 1979. The Effects of the Foss Demineralization Plant on the Benthos of the Washita River. Oklahoma Water Resources Board Publication No. 95.

<b>Area of Expertise</b>	Restoration/Vegetation Surveys
<b>Years of Experience</b>	
URS	2.5
Other Firms	5
<b>Education</b>	BS/1999/Botany/Humboldt State University, Arcata, California BS/1999/Environmental Biology/ Humboldt State University, Arcata, California
<b>Professional Affiliations</b>	California Native Plant Society Southern California Botanists Society for Ecological Restoration – California California Native Grass Association California Invasive Plant Council
<b>Overview</b>	Mr. McDonald is a botanist and restoration ecologist with over 7 years of experience in environmental consulting. He specializes in the identification, analysis, and restoration of California vegetation. Mr. McDonald has conducted surveys of plant communities throughout California, and is experienced in reconnaissance-level, focused, and quantitative vegetation surveys, vegetation mapping, developing revegetation plans for disturbed sites, performing restoration compliance inspections, data analysis, functional analysis, authoring environmental and biological sections for a variety of documents, and has assisted in jurisdictional waters delineations. Mr. McDonald also has experience sampling marine and freshwater algae populations, sampling terrestrial non-vascular plants, and conducting bird and insect population and diversity surveys. The following describes Mr. McDonald’s experience in more detail.
<b>Project Experience</b>	<p><b>Project Botanist – Sensitive Plant Surveys, Highway 74 Ortega Highway Project, Caltrans Division 12.</b> Conducted focused sensitive plant surveys, vegetation mapping, and general biological resource assessment for a proposed highway widening project for safety purposes. Several previously identified sensitive plant populations were observed, and new populations were located, although no new sensitive plant species were found on the site. All plant species observed were recorded. A report summarizing the methods and results of the survey was prepared and submitted, along with a report providing recommendations for avoiding sensitive plants and mitigating any potential affects due to the proposed project.</p> <p><b>Project Botanist for the Line 85 Natural Gas Replacement Project, Kern County -- Sempra Energy Utilities/Southern California Gas Company.</b> Botanist for the sensitive plant surveys of the complete alignment. The company provided complete biological resources services and permitting for this approximately 21.5-mile natural gas pipeline replacement project in the Grapevine/Lebec area of southern Kern and northern Los Angeles County. Based on the field surveys, no sensitive plants were found to be affected. Results were incorporated into a Biological Technical Report. The natural gas pipeline would be buried and all areas within the affected pipeline alignment would be returned to preconstruction contours and revegetated with native species as appropriate. The project included a 1601 application to CDFG and Section 404 permit.</p>

**Botanist for a Biological Resource Assessment, City of Murrieta, Riverside County -- Baile Development Company, LLC.** The proposed development consists of approximately 141 single-family detached lots and 32.7 acres of open space. A literature review, reconnaissance-level biological survey, and baseline vegetation survey was conducted of the site. Vegetation communities were identified and mapped and a habitat assessment was performed to determine the relative quality or value of the habitat types to support sensitive plant species. A biological assessment report of findings was produced. A report summarizing the methods and results of the survey was prepared and submitted.

**Botanist for Focused Sensitive Plant Survey, Riverside County -- Union Pacific Railroad.** Conducted sensitive plant surveys for Coachella Valley milk-vetch (*Astragalus lentiginosus* var. *coachellae*) and triple-ribbed milk-vetch (*Astragalus tricarlinatus*) along railroad right-of-ways through Coachella Valley near the City of Palm Springs. The host plant (*Tiquilia palmeri*) for a sensitive insect species was also included in the surveys.

**Botanist for Floristic Survey in Shaver Valley, Riverside County -- Psomas.** Conducted general and sensitive plant surveys over a ten-square-mile area in the Sonoran Desert as a follow-up to a prior habitat assessment performed to determine the relative quality or value of the habitat types to support sensitive plant species.

**Botanist for a Biological Assessment for Quino Checkerspot Butterfly Habitat for the Pala Mining/Reclamation Project, San Diego County -- Vulcan Materials Company.** Surveys were conducted for potential Quino habitat on a portion of the approximately 700-acre site located in Pala, San Diego County. A report summarizing the methods and results of the survey was prepared and submitted.

**Botanist for a Sensitive Plant Survey at the Tracy Development Site, Etiwanda, San Bernardino County -- C.A. Page Company.** Conducted focused surveys for several sensitive plant species in alluvial habitat on a 100-acre site in San Bernardino County. Performed a literature review, along with a general biological resource survey, to determine the potential for the site to support sensitive species. A report summarizing the methods and results of the survey was submitted.

**Botanist for Focused Sensitive Plant Surveys in Coachella Valley, Riverside County -- Parsons Brinkerhoff.** Conducted focused surveys over approximately 185 acres of the Sonoran Desert for Coachella Valley milk-vetch and triple-ribbed milk-vetch prior to highway construction along the Interstate 10 freeway. Reference populations were visited to ensure blooming time and proper identification. A report summarizing the results of the survey was prepared and submitted.

**Botanist for the Wetland Delineation of Mill Creek, Riverside County -- Orange County Water District.** Assisted in analyzing hydrologic conditions and vegetation in areas that are potentially subject to California Department of Fish and Game and U.S. Army Corps of Engineers jurisdiction. A report summarizing the methods and results of the survey was prepared and submitted.





Areas of Expertise	<p>Listed Species Surveys, Monitoring, Habitat Assessment and Research</p> <p>Wildlife Corridor Assessment</p> <p>Biological Impact Assessment</p> <p>ESA/Wetlands Permitting</p> <p>Vegetation Mapping and Botanical Surveys</p> <p>NEPA/CEQA Permitting and Environmental Analysis</p> <p>FEMA/NISTAC Hazard Mitigation Program NEPA Analysis</p> <p>Risk Assessment and Hazard Mitigation Planning</p> <p>Task Management</p>
Total Years of Experience	10.5
URS	8.5
Other Firms	2
Education	BA/1999/Biology/University of San Diego
Supplemental Training	<p>Flat-tailed horned lizard Identification Training by BLM (2007)</p> <p>Blunt-nosed leopard lizard Identification Training by The Wildlife Society (2007)</p> <p>California Fairy Shrimp Identification Class by Mary Belk (2006)</p> <p>Federal Wetland/Waters Regulatory Policy Training by Wetland Training Institute (2006)</p> <p>SW Willow Flycatcher Training By Mary J. Whitfield, Kern River Preserve, CA (2002)</p> <p>Desert Tortoise Survey and Handling Workshop by HDR (2001)</p> <p>Wetland Delineation Training by Richard Chan (2001)</p>
Registration/Certification	<p>U.S. Fish and Wildlife Service Recovery/Permit No. TE-135968-1</p> <ul style="list-style-type: none"> <li>• California Gnatcatcher (Presence/Absence Surveys)</li> <li>• California Fairy Shrimp</li> </ul> <p>Blunt-nosed leopard lizard - Level II Surveyor</p>
Overview	<p>Ms. Theresa Miller is a USFWS-permitted wildlife biologist with more than 8 years of experience and expertise in California sensitive species, especially in San Diego County. She conducts biological surveys with a focus on birds, reptiles and amphibians, and mammals, and develops technical reports and planning documents. Specializing in environmental projects, she has participated in and managed many aspects of focused wildlife and habitat surveys and written many biological resources evaluations for NEPA/CEQA documents. Her project experience has involved task management, agency coordination, GIS/GPS analyses, GIS modeling, database development, and risk assessments for hazard mitigation planning for numerous public and private agencies.</p>
Project Experience	<p><b><u>BIOLOGY/ ENVIRONMENTAL PLANNING PROJECTS</u></b></p> <p><b>Ausra, Inc. 180MW Solar Power Plant AFC, San Luis Obispo County, CA.</b></p> <p>Biology Task Manager for biological surveys in support of Application for Certification for an 180MW solar power generating facility located within San Luis Obispo County. Coordinated and led field team of over 14 biologists from several offices to conduct surveys for blunt-nosed leopard lizard and san Joaquin antelope squirrel, rare plant surveys and vegetation mapping of the 1,300 acre site.</p> <p>Wetland/Waters of the U.S. delineation and coordination with the ACOE to obtain a 404 Permit, and coordinated directly with Agencies to obtain ESA Section 7 and CDFG Incidental Take Permits.</p>

**Solar One Energy Facility AFC and EIS, San Bernardino County, CA.** Biologist/team leader on survey team in support of an Application for Certification for an 800MW thermal generating facility located within San Bernardino County. The project will cover 15,000 acres and will include over 36,000 solar dishes. Desert tortoise, Mohave ground squirrel, Mojave fringe-toed lizard, vegetation mapping, and rare plant surveys were conducted over majority of project area.

**Solar Two Energy Facility AFC and EIS, Imperial County, CA.** Biologist/team leader for biological surveys in support of an Application for Certification for an 800MW thermal generating facility located within Imperial County. The project will cover 7,000 acres and will include 12,000 – 36,000 solar dishes. Project included flat-tailed horned lizard focused surveys, vegetation mapping, and rare plant surveys.

**Kinder Morgan California-to-Nevada Pipeline.** Biologist and task/team leader for pipeline project from Colton, CA to Las Vegas, NV. Tasks include vegetation, jurisdictional waters, and sensitive species surveys and impact assessments. Coordinated and led over 25 biologists in desert tortoise, Mohave ground squirrel, vegetation mapping and jurisdictional delineations along a 500-and 1000-foot buffer of 234 miles of pipeline ROW.

**Solar Power Plant Fatal Flaw Studies, LightSource Renewables, California/Arizona.** Task Manager for Fatal Flaw studies relative to five sites that were previously chosen (3 in CA, 2 in AZ). A complete GIS analysis and subsequent desktop review by a variety of specialists (including water, geotechnical engineering/geology, cultural resources, biological resources, and land use) were performed. A write-up of potential fatal flaws and conclusions by each resource area, in addition to the environmental constraints map generated by the GIS system were included in the deliverables.

**SANDAG On-Call Environmental Services/I-805 Widening Project, San Diego County, CA. 2005-ongoing.** Conducted wildlife and sensitive species surveys (including least Bell's vireo, California gnatcatcher) and wetland delineations along a 1000-foot buffer of the alignment for expansion of I-805 from the Mexican Border to the 805/I-5 merge. Co-coordinated team effort for sensitive species surveys and wetland delineations, and prepared wetland delineation report and mapping of delineated jurisdictional waters. Also conducted least Bell's vireo surveys.

**Cavallo Farms Wildlife Corridor Study, City of San Diego, CA. 2006.** –Field team leader for a wildlife corridor assessment of an 8-acre horse farm/training property located within an existing MSCP wildlife corridor linkage in Del Mar, California. Checked and maintained 24 passive tracking stations and 5 camera stations within and surrounding the property for 8 weeks in August and September 2006 to identify tracks and scat of large mammal species, including mountain lion, bobcat, coyote, and southern mule deer. Conducted California gnatcatcher protocol surveys and identified territories throughout study area.

**Canyon Crest, City of Brea, California. 2002.** - Field Coordinator for field

surveys with a particular emphasis on identification of the local movement patterns of large mammals (*i.e.*, coyote, mule deer, gray fox, bobcat, and mountain lion). Field activities included construction and maintenance of tracking stations and identification of mammal scat, tracks, and game trails. Prepared wildlife corridor assessment.

**CSS Monitoring Program, City of San Diego, CA** - Coordinated team effort and performed protocol sensitive species surveys for the coastal California gnatcatcher MSCP Reserve Habitat Monitoring project. Supplied City of San Diego with updated sensitive species location data to use in updating the MSCP.

**Colorado River Aqueduct Operations and Management Habitat Conservation Plan, MWD of Southern California 2004-2006.** - GIS Specialist, field coordinator and field biologist on team performing 2 seasons of desert tortoise and rare plant surveys along the length of the Colorado River Aqueduct from western Riverside County, California to Parker, Arizona. Created GIS field maps and species locations maps for use in determining conservation areas for the HCP within MWD ownership. Field coordinator for 12 biologists and subcontractors from several offices during second year of surveys which focused on rare plant surveys for 41 sites. Observed tortoise and identified tortoise burrows and sign. Compiled and analyzed several years of data collection including 2 years of survey data, and prepared HCP document and appendices.

Otay Mountain/Kuchamoa Cooperative Planning Area Biological Monitoring Plan, GIS Database Development, and Cultural Resources Study, BLM. URS prepared a complete GIS Database, Biological Monitoring Plan, and Cultural Resources Study for the Otay/Kuchamoa Cooperative Planning Area managed by the Bureau of Land Management in San Diego County, Ca. The objective of this task order was the development of the baseline database – developed as GIS data layers – needed to conduct the planning process and EIS analysis, including development of a reasonable range of land management alternatives. The focus of the baseline conditions was related directly to the biological and cultural resources for the management area. This project received a Merit Award from the San Diego AEP.

**Metropolitan Water District, Upper Feeder-Santa Ana River Embankment Protection. 2006.** Biology task leader to assist FEMA with CEQA/NEPA compliance. Conducted least Bell's vireo surveys along the Santa Ana River in Riverside County to determine impacts from project implementation as part of FEMA HMGP mitigation/restoration project.

**Whitewater Mutual Water Company, Irrigation Water Intake / Storage Structure Repair. 2006.** Biology task leader to assist FEMA with CEQA/NEPA compliance. Conducted arroyo southwestern toad and southwestern willow flycatcher surveys to determine biological impacts of restoring the irrigation water intake and water storage facilities to pre-disaster condition. Part of FEMA HMGP program.

**State Route 56/Interstate 5 Interconnections, City of San Diego, California. 2005-ongoing.** Conducted least Bell's vireo surveys and vegetation mapping of study site for the "connectors" project for Interstate 5 and State Route 56. Prepared

biotechnical report. Connections from southbound Interstate 5 to eastbound State Route 56 as well as the connection from westbound State Route 56 to northbound Interstate 5 were not completed as part of the initial State Route 56 project.

**Oak Valley Substation & Transmission Line Project, Southern California Edison, Riverside County, California. 2006.** Conducted sensitive species surveys (including least Bell's vireo and southwestern willow flycatcher) of project area for the installation of a new substation, re-conductoring of several transmission lines and new installation of several transmission lines in Riverside County (including the cities of Beaumont, Banning, and Calimesa).

**Mira Sorrento Place Road Extension, City of San Diego, California. 2005.** Conducted biological construction monitoring of during implementation of road extension.

#### Professional Associations

Association of Environmental Professionals, Member, (2000–Present)  
Women's Environmental Council, Member, (2002 - Present)  
Ecological Society of America Member, (2002-Present)  
Wildlife Society Member, (2001 – Present)  
Desert Tortoise Council Member, (2002-Present)

Areas of Expertise	<p>Surface Hydrology Hydraulic Modeling Drainage Design Floodplain Modeling Sediment Transport and Scour Analysis Erosion and Sediment Control Stormwater Quality BMP Design</p>
Total Years of Experience	14
URS	4
Other Firms	10
Education	<p>MS/1994/Civil Engineering (Water Resources)/Virginia Tech BS/1992/Civil Engineering/Virginia Tech</p>
Registration/Certification	<p>1997/Registered Civil Engineer/California, No. 56780 2006/Certified Professional in Erosion and Sediment Control/No. 3497</p>
Overview	<p>Mr. Moore is a Registered Civil Engineer and Certified Professional in Erosion and Sediment Control (CPESC) with 14 years of experience with hydrologic and hydraulic engineering for urban drainage facilities, flood control improvements, and erosion control facilities. His work has included preliminary and final engineering design phases, as well as FEMA and NPDES documentation. He has extensive experience evaluating riverine erosion processes related to the analysis, design, and preparation of bridge and levee lining scour investigations and erosion control remediation documents, and preparation and review of stormwater quality BMP design and documentation including technical assistance/review of the San Diego County Low Impact Development Manual. Mr. Moore is skilled using HEC-1, HEC-2, HEC-RAS, HEC-6, Los Angeles County computer programs, Ventura County VCRAT, WSPG, Civil-D, and PondPack.</p>
Project Experience	<p><b>Hydrology and Hydraulic Analysis and Drainage Design</b></p> <p><b>San Diego County Regional Airport Authority, RON Apron Design, San Diego, California - Water Resources Engineer</b> Project consisted of preparing the 30% Design Drainage Report including preliminary level hydrology and hydraulics calculations and stormwater quality design for a proposed Remain-Over-Night Apron. Work included preparation of the drainage report; research and design of a StormFilter stormwater quality treatment vault, and porous pavement section. Continued work includes 70% design of the drainage facilities and update of the drainage report and stormwater quality treatment facility design.</p> <p>Project Completion: 2007 Project Fees: \$612,000 total (\$100,000 Drainage Design) Client: San Diego County Regional Airport Authority</p> <p><b>Los Angeles County World Airports (LAWA), LAX Terminals 1, 2, and 3 Expansion Stormwater Quality BMP Design</b> Project consisted of preparing the 100% stormwater quality BMP design sheets for retrofit of storm drain inserts and construction of a new stormwater quality hydrodynamic separator. Duties included hydrologic and hydraulic design of the</p>

post-construction BMPs; coordination with BMP vendors, Project Architect, and LAWA.

Project Completion: 2007  
Project Fees: \$15,000  
Client: Gensler

**Marine Corps Logistics Base Barstow, Storm Drain Study, Barstow, California - Water Resources Engineer**

Assisted in conducting a storm drain study for MCLB Barstow, CA at Nebo Main Base, Yermo Annex, and the Rifle Range. The Study included the following tasks: 1) Inventory existing storm drainage system; 2) Determine which stormwater outfalls are subject to the Industrial Storm Water General Permit; 3) Prepare DD1391 forms for locations of the storm drainage system that require maintenance, repair or replacement; 4) Develop hydrology and hydraulic design criteria for the design of new storm drainage systems.

Project Completion: 2007  
Project Fees: \$125,000  
Client: U.S. Naval Facilities Southwest Division

**BNSF Cajon Main Third Track, San Bernardino County – Water Resources Senior Project Engineer**

Project consisted of preparation of EIR/EIS documentation and final engineering construction drawings for 15 miles of proposed third main heavy rail track from Summit to Keenbrook. Duties included preparing pre- and post-project hydrology and hydraulic analyses of over 70 culverts/bridges using Rational Method, USGS Regression Equations, CulvertMaster, WSPG-W, HEC-RAS, and HEC-18 Scour Analysis. Analyzed and mapped 10- and 100-year floodplains for over 10 stream miles using HEC-RAS. Provided preliminary design of proposed culvert extensions, energy dissipation, and bridge scour countermeasures. Prepared EIR/EIS Hydrology Technical Report, EIR/EIS impacts and mitigation measures discussion, and Final Engineering Hydrology and Hydraulic Reports.

Project Completion: July 2006  
Project Fees: \$4.1 million project design total, \$480,000 Hydrology/Hydraulics  
Client: BNSF Railway Company

**State Route 76 Widening and Realignment, San Diego County – Water Resources Senior Project Engineer**

Project consists of preparing final engineering construction drawings for a 2.3 kilometer widening and realignment of an existing rural state route along San Luis Rey River and bridge widening along a River tributary. Duties included the preparation of hydrology and hydraulic analyses, reports, and storm drain design for final engineering construction drawings including: Rational Method and Unit Hydrograph Method hydrology calculations, culvert, ditch, and inlet design and analysis using CulvertMaster, WSPG-W, and FlowMaster (HEC-22) software; hydraulic floodplain calculations and mapping using HEC-RAS; bridge scour analysis using HEC-18; sediment transport and scour protection design along San Luis Rey River using HEC-6 and HEC-23, and FEMA and Caltrans plan/report preparation and processing.



Project Completion: July 2006  
Project Fees: \$650,000 project design total, \$60,000 Hydrology/Hydraulics  
Client: Granite Construction Company

**Plum Canyon Tract 31802, Los Angeles County, Water Resources Project Engineer**

Project consisted of preparation of final engineering construction drawings for backbone improvements (grading, street, and utilities) for a 500-lot subdivision adjacent to the City of Santa Clarita. Duties included: storm drain system layout; L.A. County hydrology and hydraulic analyses (MODRAT and WSPG-W) including sediment yield (debris) calculations; CDS Unit sizing and analysis; hydrology and hydraulic report preparation and processing; floodplain analysis, mapping and Conditional and Final Letters of Map Revision (CLOMR/LOMR) preparation and processing through FEMA.

Project Completion: March 2006  
Project Fees: \$119,000 Hydrology/Hydraulics Fee  
Client: William Rose & Associates, Inc./SunCal Companies

**Bressi Ranch Development, Carlsbad – Water Resources Project Engineer**

Project consisted of preparation of a tentative map and final engineering construction drawings for backbone improvements (grading, street, and utilities) for a 620-unit, 585-acre mixed use development. Duties included: storm drain layout and preliminary design, hydrology and hydraulic analysis of storm drain system and CDS Units; detention pond design; erosion and sediment control plans, two construction SWPPPs, and final post-construction water quality implementation plans.

Project Completion: 2002  
Project Fees: \$40,000 Hydrology/Hydraulics Fee  
Client: Lennar Homes

**Kelly Ranch Residential Development, Carlsbad – Water Resources Project Engineer**

Project consisted of preparation of tentative map and final engineering construction drawings for backbone improvements (grading, street, and utilities) for a 1600-unit, 433-acre residential development. Duties included: final engineering hydrology and hydraulic storm drain analysis and reports; detention basin analysis; post-construction water quality BMP concept plans and facility sizing; and sediment yield/erosion calculations using MUSLE and RUSLE for a 170-acre portion of the development.

Project Completion: 2002  
Client: Shea Homes

**Bishop's School Redevelopment, La Jolla, San Diego – Water Resources Project Engineer**

Project consisted of preparation of tentative map level redevelopment engineering plans for a private high school located in a developed urban area. Duties included: Rational Method hydrology and WSPG-W hydraulic analysis of large offsite surface and underground storm drain system, concept plans and modeling for

surface routing of offsite flows through site, preparation and processing of hydrology and hydraulic reports through City of San Diego.

Project Completion: 2002

Client: Tucker, Sadler, Noble, Castro Architects

**Big Sky Ranch Residential Development, Ventura County – Water Resources Project Engineer**

Project consisted of tentative map preparation and processing for a large residential development in Simi Valley. Drainage related work included preparation of a Modified Rational Method hydrology study utilizing VCRAT to determine existing and developed runoff, street and inlet hydraulic capacity calculations, debris storage and bulk flow analysis utilizing Scott's Method for estimating debris potential, HEC-RAS floodplain analysis, water quality basin sizing utilizing Ventura County methodology, and detention basin analysis utilizing PondPack and VCHYDRO.

Project Completion: 2002

Project Fees: \$150,000 Hydrology/Hydraulics

Client: William Rose & Associates, Inc./Shea Homes

**Santa Fe Depot Redevelopment, San Diego – Water Resources Project Engineer**

Project consisted of planning phase redevelopment of Santa Fe Depot in downtown San Diego. Duties included: Rational Method and Unit Hydrograph Method hydrology and WSPG-W hydraulic analysis of the 'B' Street Flume (Box Culvert) and tributaries which drain over a square mile network of storm drains within Balboa Park and downtown San Diego.

Project Completion Date: 2001

Client: Catellus Development Corporation

**California Terraces North Residential Development, San Diego – Water Resources Project Engineer**

Project consisted of preparation of tentative map and final engineering construction drawings for backbone improvements (grading, street, and utilities) for a 50 lot residential development. Duties included: final engineering hydrology and hydraulic storm drain analysis and reports; detention analysis; post-construction water quality BMP concept plans and facility sizing.

Project Completion: 2000

Client: Pardee Homes

**Other Drainage Design Projects:**

- Newhall Ranch Project EIR, Santa Clarita
- Dennery Ranch Residential Development, San Diego
- Carmel Valley Neighborhood 10, Phase 2 Residential Development, San Diego
- Residential and Industrial/Commercial Tracts 36668, 44429, 44800, 44831, 46029, 48202, 52206, and Parcels 19784 and 20795, Santa Clarita
- Fair Oaks Ranch, Tracts 47200, 52833, and 52938, Santa Clarita
- Dockweiler Project, Tract 51963, Santa Clarita

- Lang Ranch, Ventura County
- Northlake Development, Tracts 44429 and 51852, Castaic

### **Floodplain Modeling and FEMA Processing**

#### **State Route 76 Widening and Realignment, San Diego County – Water Resources Project Engineer**

Prepared pre- and post-project hydraulic floodplain calculations and mapping for San Luis Rey River using HEC-RAS. Prepared and processed FEMA CLOMR.

Project Completion: July 2006

Project Fees: \$650,000 project design total, \$60,000 Hydrology/Hydraulics

Client: Granite Construction Company

#### **BNSF Cajon Main Third Track, San Bernardino County – Water Resources Senior Project Engineer**

Prepared, analyzed and mapped pre- and post-project conditions 10- and 100-year floodplains for over 10 stream miles using HEC-RAS including 8 existing bridge crossings and 4 widened bridge structures.

Project Completion: July 2006

Project Fees: \$4.1 million project design total, \$480,000 Hydrology/Hydraulics

Client: BNSF Railway Company

#### **Plum Canyon Tract 31802, Los Angeles County - Water Resources Project Engineer**

Prepared pre- and post-project floodplain analysis and mapping. Prepared and processed Conditional and Final Letters of Map Revision (CLOMR/LOMR) submittals through FEMA.

Project Completion: March 2006

Project Fees: \$119,000 Hydrology/Hydraulics Fee

Client: William Rose & Associates, Inc./SunCal Companies

#### **Loma Alta Creek, Oceanside – Water Resources Project Engineer**

Prepared a FEMA flood map revision for the City. Performed creek survey oversight, hydraulic modeling and floodplain mapping for creek and flood map processing through FEMA.

Project Completion Date: 2003

Project Fees: \$18,000

Client: City of Oceanside

#### **Other Floodplain Modeling, Flood Control, and FEMA Processing Projects:**

Design Engineer for hydraulic design of over 10 miles of channel improvements for various residential and industrial/commercial projects within the Santa Clarita area. Projects included: HEC-2 and HEC-RAS hydraulic analyses; preliminary and final drafting and design of channel improvements including levees, drop structures, and point stabilizers; and FEMA CLOMR/LOMR preparation and processing.

- Newhall Ranch Project, Santa Clara River, San Martinez Chiquito Canyon, San Martinez Grande Canyon, Santa Clarita

- Newhall Ranch Road Bridge, San Francisquito Creek, Santa Clarita
- Castaic Creek, Commerce Center Drive to I-5, Santa Clarita  
Hasley Canyon Creek, Santa Clarita, California.
- McBean Parkway Bridge Widening, Santa Clara River, Santa Clarita
- Copperhill Drive Bridge, San Francisquito Creek, Santa Clarita
- Decoro Drive Bridge, San Francisquito Creek, Santa Clarita
- Avenue Scott Bridge, San Francisquito Creek, Santa Clarita
- Bouquet Canyon, Santa Clarita
- Parcel Map 20838, Santa Clara River, Santa Clarita
- South Fork Santa Clara River, Santa Clarita

Project Completion Date: 1995-1999

Client: Newhall Land and Farming Company

### **Sediment Transport and Scour Analysis**

#### **State Route 76 Widening and Realignment, San Diego County – Water Resources Project Engineer**

Prepared pre- and post-project long-term and 100-year flood event sediment transport analyses and evaluation for San Luis Rey River and Horse Ranch Creek using HEC-6. The HEC-6 analysis was used in conjunction with HEC-20 and HEC-23 to determine the total scour potential along a proposed embankment and retaining wall along the river. A proposed rock riprap embankment along the river was designed using the methodology in Caltrans' California Bank and Shore Rock Slope Protection Design Manual. Prepared bridge scour analysis using HEC-18 methodology.

Project Completion: July 2006

Project Fees: \$650,000 project design total, \$60,000 Hydrology/Hydraulics

Client: Granite Construction Company

#### **BNSF Cajon Main Third Track, San Bernardino County – Water Resources Senior Project Engineer**

Prepared HEC-18 bridge scour analyses, evaluations, and conceptual bridge pier scour countermeasure design for two proposed bridges within Cajon Creek.

Project Completion: July 2006

Project Fees: \$4.1 million project design total, \$480,000 Hydrology/Hydraulics

Client: BNSF Railway Company

#### **Gasoducto Bajanorte Expansion, Baja California, Mexico – Water Resources Senior Project Engineer**

The overall project consists of the construction of a 42-inch Liquid Natural Gas pipeline between Ensenada and the U.S.-Mexico Border. Specific duties included analyzing the scour potential and recommended countermeasures at three proposed pipeline crossings under ephemeral rivers/creeks using a variety of empirical equations and other methods.

Project Completion: April 2006

Project Fees: \$7,000

Client: Semptra Pipelines & Storage

**Sweetwater River Scour Evaluation – Water Resources Senior Project Engineer**

The project consisted of the installation of a new transmission line including one pole within the 100-year floodplain of the Sweetwater River. Specific duties included analyzing the scour potential at the proposed pole using HEC-18 methodology with parameters from an existing County HEC-2 analysis.

Project Completion: July 2004

Project Fees: \$5,000

Client: San Diego Gas & Electric

**Santa Clara River and San Francisquito Creek, Santa Clarita, Los Angeles County – Water Resources Design Engineer**

Design Engineer for HEC-6 sediment transport analyses of over 20 stream miles. Analysis included determination of existing and proposed sediment transport amounts, and overall scour and deposition trends associated with proposed channel linings.

Project Completion: 1999

Client: Newhall Land and Farming Company

**Additional Bridge Scour Projects:**

The following bridge scour analyses were performed for the following projects utilizing the methodology in the Los Angeles County Department of Public Works Sedimentation Design Manual:

- Newhall Ranch Project, Commerce Center Drive, Long Canyon, and Potrero Canyon Bridges, Santa Clara River, Santa Clarita
- Avenue Scott Bridge, San Francisquito Creek, Santa Clarita
- McBean Parkway Bridge Widening, Santa Clara River, Santa Clarita
- Sand Canyon Bridge Widening, Santa Clara River, Santa Clarita
- Copperhill Drive Bridge, San Francisquito Creek, Santa Clarita
- Decoro Drive Bridge, San Francisquito Creek, Santa Clarita

Project Completion: 1995-1999

Client: Newhall Land and Farming Company

**Erosion and Sediment Control and Stormwater Quality**

**Rancho Santa Fe Village Presbyterian Community Church, Porous Pavement Design - Water Resources Engineer**

Provided hydrology, hydraulic, and porous pavement storage layer thickness to provide stormwater quality and detention for increased peak runoff flows for a small redevelopment project.

Project Completion: 2008

Project Fees: \$5,000

Client: Site Design Associates

**Port of San Diego SUSMP Review and Preparation– Water Resources Senior Project Engineer**

Project consists of the review and preparation of selected Standard Urban

Stormwater Mitigation Plans (SUSMP) for tenant and capital projects within the Port's jurisdiction. Duties include review and preparation of the project SUSMP documents to ensure compliance with the Port's requirements including analysis of the receiving water quality, pollutants of concern, and proper implementation of site design, source control, and treatment control BMPs. URS is also providing support in updating the Port's SUSMP Manual to reflect a new Municipal Stormwater Permit.

Project Completion: Ongoing  
Project Fees: \$50,000  
Client: Port of San Diego

**Caltrans Roadside Vegetated Treatment System (RVTS) Stormwater Quality Monitoring - Task Order Manager**

Project consists of monitoring, sampling, and analysis along Interstate 5 in San Onofre and along State Route 91 in Yorba Linda as part of an ongoing Caltrans stormwater quality monitoring effort. Duties include supervising field crews, installation of monitoring equipment, preparation of technical memos, and project financials.

Project Completion: Ongoing  
Project Fees: \$313,000  
Client: Caltrans Headquarters

**Caltrans SWPPP/WPCP Templates and Preparation Manual Updates – Assistant Task Order Manager**

Caltrans Headquarters tasked URS to update their Storm Water Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) templates and Preparation Manual to address comments received over the last several years. Specific role includes providing response to comments, quality assurance and quality control on template revisions, and coordination with Caltrans Headquarters.

Project Completion: 2007  
Project Fees: \$150,000  
Client: Caltrans Headquarters

**Caltrans Cellular Confinement System Research – Task Order Manager**

This project consisted of assisting Caltrans Headquarters to determine the suitability of use and application guidelines for Cellular Confinement Systems (CCS) as a temporary construction storm water BMP. Duties included investigating existing literature, websites, and manufacturers to conduct research and determine applicable uses of CCS as a temporary construction BMP.

Project Completion: January 2006  
Project Fees: \$18,000  
Client: Caltrans Headquarters

**Marine Corps Air Station (MCAS) Miramar –Senior Project Engineer**

Project consisted of field erosion assessments, evaluation, and prioritization of active erosion sites on the undeveloped areas of MCAS Miramar. Work included landscape level inventories of soil erosion sites on the undeveloped portions of the

station; evaluation of these sites for potential restoration; documentation of these sites using digital photography, Global Positioning Systems (GPS) and Geographic Information Systems (GIS) mapping technology; recommendations for soil stabilization and long-term erosion minimization of the sites; and prioritization of erosion site restoration suggestions.

Project Completion: October 2005

Project Fees: \$74,000

Client: MCAS Miramar, Environmental Management Division

**CingularWireless Site, City of Moorpark, California – Water Resources Senior Project Engineer**

Project consisted of the preparation of final engineering construction drawings for the grading and placement of two unmanned cellular communication facilities on an existing steep hillside. Duties included the preparation of erosion and sediment control plans and WPCP in compliance with the Ventura County municipal stormwater permit.

Project Completion: January 2005

Project Fees: \$10,000

Client: Cingular Wireless

**Mission City North, City of San Diego – Water Resources Project Engineer**

Prepared construction SWPPP, Erosion Control Plan, and Water Quality Technical Report including post-construction BMP design for a 120-acre multi-family residential development.

Project Completion: 2002

Client: Shea Homes

**Bressi Ranch Development, Carlsbad – Water Resources Project Engineer**

Prepared hydrology and hydraulic analysis of storm drain system and CDS Units; detention pond design; erosion and sediment control plans, two construction SWPPPs, and final post-construction water quality implementation plans.

Project Completion: 2002

Project Fees: \$40,000 Hydrology/Hydraulics Fee

Client: Lennar Homes

**Santa Fe Depot, City of San Diego – Water Resources Project Engineer**

Prepared Water Quality Technical Report, construction SWPPP, Erosion Control Plan, and drainage design and report for a downtown high-rise building.

Project Completion: 2001

Client: Catellus Development Corporation

**Professional Associations**

American Society of Civil Engineers, Associate Member  
American Public Works Association  
International Erosion Control Association



# ERIN MCDERMOTT

Botanist, Wetland and GPS/GIS Specialist

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## **EDUCATION/TRAINING**

- 1997 B.S., Biology, University of California, Santa Cruz
- 2004 M.S., Horticulture and Agronomy, University of California, Davis

## **PROFESSIONAL EXPERIENCE**

- 2007–present Nomad Ecological Consulting, Martinez
- 2006-present Vegetation Committee Chairperson, CNPS East Bay Chapter
- 2004-2007 Sycamore Associates LLC, Walnut Creek.
- 2004 Exotic Plant Mgt. Team, National Park Service, Point Reyes National Seashore
- 2001-2004 Research Assistant, Environmental Horticulture Dept., UC Davis
- 2002-2003 Biological Technician, Crew Leader, USDA Forest Service
- 2000 - 2001 Freelance Horticulturist
- 1999 Intern, National Tropical Botanical Garden, Lawai, Kauai, Hawaii

Erin McDermott is a practiced arborist, botanist, and wetland ecologist with over seven years of experience conducting biological assessments, botanical surveys, focused surveys for rare, threatened, and endangered plant species, wetland delineations, tree surveys, and habitat assessments. Ms. McDermott integrates her extensive biological field experience with a diverse background in a range of plant-related disciplines including botany, ecology, soil science, wetland ecology, weed science, restoration ecology, arboriculture, and horticulture.

As a botanist, Ms. McDermott conducts focused surveys for special-status plant species, habitat assessments, and vegetation sampling. Ms. McDermott has experience conducting botanical surveys in several geographic regions of the California Floristic Province including the San Francisco Bay Area, Central Coast, Coast Ranges, Sacramento Valley, San Joaquin Valley, Sacramento-San Joaquin Delta, North Coast, Sierra Nevada foothills, Sierra Nevada, and Klamath Ranges. She has surveyed in a variety of habitats including valley grassland, chaparral, serpentine outcrops, coastal scrub, salt marshes, freshwater marshes and seeps, meadows, vernal pools, alkaline meadows and scalds, riparian areas, oak woodland, and coniferous forests. Ms. McDermott volunteers as Vegetation Committee Chair for the East Bay Chapter of the California Native Plant Society where she uses CNPS vegetation protocols to collect vegetation data.

Ms. McDermott has extensive experience in native plant restoration and horticulture, and has helped develop restoration and revegetation planting plans, coordinate restoration implementation, and conduct mitigation monitoring. While working for the National Park Service on the Exotic Plant Management Team, Ms. McDermott gained experience implementing invasive plant control projects in National Parks throughout California.

Ms. McDermott has conducted numerous wetland delineations in accordance with the U.S. Army Corps of Engineers standards and in compliance with Section 404 of the Clean Water Act and in conformance with California Department of Fish and Game and Regional Water Quality Control Board standards. Ms. McDermott is a GIS specialist with experience collecting spatial data in the field and representing the data in maps and graphics that clearly display biological resources. She utilizes GIS technology to create wetland delineation maps, vegetation maps, tree inventory maps, planting plans, and results of biological surveys. As an International Society of Arboriculture (ISA) certified arborist, Ms. McDermott conducts tree inventories and surveys to document and evaluate tree resources in compliance with local tree ordinances. Ms. McDermott has prepared tree preservation plans that include tree resource assessments, preservation recommendations, impact analyses, avoidance and mitigation measures, and methods for tree preservation during project implementation.



## Kristin M. Marsh

*Staff Biologist*

### Areas of Expertise

Wetland Delineation  
NEPA Implementation and  
Documentation  
Cumulative Impact Analysis  
Geographic Information Systems  
(ArcGIS)  
Environmental Sampling  
Wildlife Observation

### Years of Experience

With URS: 5 Years

### Education

B.A., 2003, Environmental Science,  
Biological Science emphasis,  
Alaska Pacific University

### Registration/Certification

40-hour HAZWOPER – OSHA  
Training (2001)  
8-hour HAZWOPER Refresher –  
OSHA Training (2005)  
First Aid, CPR, and AED  
Certification (2003)  
LTR Aviation Training (2001)  
ESRI GIS I Certification (2003)

### Awards

2003 Graduation with Honors  
(Summa Cum Laude)  
2001 Alaska Pacific University  
Environmental Science  
Departmental Award – Excellence  
in Environmental Science Theory  
and Practice

### Professional

#### Societies/Affiliates

Society of Wetland Scientists  
Alaska Association of  
Environmental Professionals

### Overview

I am currently a Staff Biologist with URS Corporation, and have demonstrated experience in Alaska wetlands and vegetation, National Environmental Policy Act (NEPA) implementation, documentation, and cumulative effects analysis, Geographic Information System (GIS), Global Positioning System (GPS), wildlife observation, and environmental sampling. I began my career with URS as a receptionist and word processor, and was promoted to field technician within a year and a half. Upon completion of my BA in the winter of 2003, I was promoted to biologist. This is my first professional position, thus I have only provided project history from my time at URS. Further employment history is available upon request.

### Project Specific Experience

#### WETLANDS

**Alaska Railroad Corporation, Permitting of Railroad Near Talkeetna, In-field Assistant Biologist:** Responsible for wetlands delineation and classification according to the U.S. Army Corps of Engineers (USACE) 1987 Wetland Delineation Manual and U.S. Fish and Wildlife Service (USFWS) Cowardin Classification, field team mobilization, data management, and organization.

**Bureau of Indian Affairs, Cordova Emergency Oil Spill Response Facility, In-field Staff Biologist:** Responsible for wetlands and other waters of the U.S. delineation and functions and values assessment for reporting and permitting. Conducted wetland delineations, classification, and functions and values assessment according to 1987 Adamus, field team mobilization, data management, GPS, GIS delineations and acreage calculations, technical report writing, and organization. Wetland surveys covered approximately 8 miles north of Cordova along the proposed alignment between Orca and Shepard Point.

**National Park Service, South Denali Implementation Plan, In-field Staff Biologist:** Responsible for vegetation inventory and wetlands delineation and functions and values assessment for reporting. Conducted wetland delineations, classification, and functions and values assessment according to 1987 Adamus, vegetation classification according to The Alaska Vegetation Classification, field team mobilization, data management, GIS delineations and acreage calculations, technical report writing, and organization. Wetland surveys covered approximately 25 miles of proposed alignments in the Petersville area.



**Department of Transportation and Public Facilities, Juneau Access Improvements Project, In-field Staff Biologist:** Responsible for sensitive plant survey and USDA Forest Service Biological Evaluation. Responsible for geographic GPS, GIS delineations, technical report writing, figure production, sensitive plant survey according to the Goff timed meander technique, and according to USDA Forest Service Region 10 protocol. Over 40 sites were surveyed along the over 100 miles of proposed road alignment on either side of the Lynn Canal between Juneau and Skagway, Alaska.

**Department of Transportation and Public Facilities Juneau Access Improvements EIS, In-field Assistant Biologist:** Responsible for wetlands and other waters of the U.S. delineations and functions and values assessment for reporting and permitting. Responsible for wetland classification according to the USACE 1987 Wetland Delineation Manual and USFWS Cowardin Classification, functions and values assessment according to 1987 Adamus, field team mobilization, data management, GIS delineations and acreage calculations, technical report writing, and organization. Wetland surveys covered over 100 miles of proposed road alignment on either side of the Lynn Canal near Juneau, Alaska.

**Alaska Gas Producers Pipeline Team, FERC Certification and Permitting For Alaska Segment of Proposed Natural Gas Pipeline From Prudhoe Bay, Alaska to Chicago, In-field Assistant Biologist:** Responsible for wetlands delineation and wetland classification according to the USACE 1987 Wetland Delineation Manual and USFWS Cowardin Classification, field team coordination and organization, and data management and organization. Surveyed wetlands from Delta Junction to Atigun Pass, Alaska.

## **NATIONAL ENVIRONMENTAL POLICY ACT**

**Bureau of Land Management Ring of Fire Resource Management Plan and Environmental Impact Statement, Biologist:** Responsible for preparing vegetation, wetlands/riparian and invasive plant species discussion for Affected Environment, and conduct the cumulative effects analysis for these resources. Assisted with project initialization, GIS mapping, EndNotes referencing, document control, and document protocols/guidelines.

**Bureau of Indian Affairs Cordova Emergency Oil Response Facility Environmental Impact Statement, Biologist:** Responsible for preparing wetlands and other waters of the U.S. discussion for Affected Environment, and cumulative effects analysis for Environmental Consequences. Assisted with project initialization, document control, and document protocols/guidelines.

**NOAA, Fisheries Groundfish Final Programmatic Supplemental Environmental Impact Statement, Biologist:** Responsible for revising several of the Affected Environment sections including target and forage fish, and assisted with the physical environment section. Conducted the



cumulative effects analysis of target and forage fish. Assisted with response to comments, references, technical editing and document preparation. Task leader on document control for the finalization of the seven-volume environmental impact statement.

**Chugach Electric Association Fire Island Wind Facility Environmental Assessment, Biologist:** Responsible for preparing wetlands and other waters of the U.S. discussion for Affected Environment, and cumulative effects analysis for Environmental Consequences. Assisted with document control, GIS mapping, document protocols/guidelines.

**NOAA Fisheries IDIQ:** Attended the National Marine Fisheries Service NEPA Tiering Workshop facilitated by URS and Larry Canter and assisted with the review of the conference document.

## **WILDLIFE OBSERVATION**

**Alaska Gas Producers Pipeline Team, Field Technician:** Responsible for Dall Sheep Survey for location of a proposed compressor station for the Alaska segment of natural gas pipeline from Prudhoe Bay, Alaska, to Chicago. Responsible for lambing and mineral lick activity observations, documenting all field activities, and data management.

## **PUBLIC INVOLVEMENT**

**Knik Arm Bridge and Toll Authority (KABATA) Knik Arm Crossing, Public Involvement and Environmental Impact Statement: Assisted** with review and/or preparation of the Transition Report, Public Involvement Implementation Plan, RISE Alaska white papers, and various newsletters and newspaper inserts. Assisted with the preparation of the Wasilla and Anchorage public open houses. Attended the KABATA Cumulative Effects workshop facilitated by Larry Canter; slated for vegetation and wetlands cumulative effects analyses.

**NOAA Fisheries Groundfish Final Programmatic Supplemental Environmental Impact Statement (PSEIS), Task Leader:** Responsible for comment analysis, assisted with development of Comment Analysis Database and Comment Analysis Report for the 2003 Draft PSEIS.

**Chevron Former Kenai Refinery Public Involvement:** Prepared the NEPA and Permitting Strategy document and assisted with the preparation of a Preliminary Public Involvement Plan.

## **ENVIRONMENTAL SAMPLING**

**Elmendorf Air Force Base, Basewide Environmental Sampling Program, Environmental Technician:** Responsible for groundwater monitoring program. Tasks included working with drillers, conducting Hanby Soil Tests, in-field ferrous iron and alkalinity tests, well



maintenance, using a photoionization detector (PID), installing pumps for groundwater monitoring, quality control and documentation of all field activities, shipping samples.

**Fort Richardson, Operation Unit B Groundwater Monitoring, Environmental Technician:** Responsible for groundwater monitoring program. Tasks included groundwater sampling, sample control, water level surveys, and documentation of field activities.

**Alaska Department of Environmental Conservation (ADEC), Source Water Assessments of Public Water, Field Technician:** Responsible for slope, zone, and contaminant source calculations, well locations, background and historical information research/reporting, and document mailouts.

#### **REFERENCES:**

David Erikson, Senior Biologist, URS Corporation, (907) 261-9750

Dr. Roman Dial, Professor, Alaska Pacific University, (907) 564-8296

Anne Maki, Environmental Scientist, URS Corporation, (907) 261-9741

Lisa Loy Gray, Project Planner, URS Corporation, (907) 261-6713 or (907) 644-2161

#### **SUPERVISORS:**

James Glaspell, Associate Biologist, Manager of Environmental Services, (907) 261-9749

Jon Isaacs, Associate Planner, Director of Business Development, (907) 261-6714

# Lech Naumovich

Botanist, Restoration Ecologist, GIS specialist

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## EDUCATION/TRAINING

2001 Master's Degree, School of Forestry and Environmental Studies, Yale University  
1998 Bachelor's Degree, Biology, Chemistry, Philosophy, University of Wisconsin  
1998 Student Conservation Association Associate, USFS, Kamas, UT  
1998 Firefighter's Red Card, USFS  
2002 Post graduate Fulbright Scholar, Agricultural University of Wroclaw, Poland  
2007 CNPS Releve and Rapid Assessment Workshop, California Native Plant Society

## PROFESSIONAL EXPERIENCE

2006-Present Director, Golden Hour Restoration Institute, Berkeley, CA  
2006-Present Conservation Analyst, East Bay CNPS, Walnut Creek, CA  
2006-Present Independent Biological Consultant  
2005-2006 Biological Technician and Restoration Coordinator, USARC – Fort Hunter Liggett, CA  
2003-2005 Biological Technician, Restoration Technician, BLM – Fort Ord, CA

Mr. Naumovich has 8 years of experience performing field-based surveys for plants, vegetation types, and habitat types. His projects are mostly centered in the Bay Area of California, but he has performed surveys throughout California, notably California deserts, Northern California, the Sierra Nevada, and the Central Coast. His primary expertise is in the field of botany and ecology surveys and then subsequent descriptions of properties and areas for biological conservation, development, and other related activities. Mr. Naumovich is well versed in the CDFG requirements for rare plant surveys and proper reporting methodology in CEQA and NEPA documents. Mr. Naumovich is familiar with laws and regulations pertaining to California's Endangered Species Act as well as the Federal ESA.

Mr. Naumovich has worked with a wide variety of personnel varying from consultants to agency employees to non-profits to land trusts and developers. He has many years experience on federal lands including USFS, BLM, and NPS. He is familiar with operating policies and procedures including JSA's and Hazard Analysis. Mr. Naumovich has experience and training in working in extreme environments for prolonged periods, including desert and alpine areas.



## Todd A. Ontl

Graduate Environmental Planner

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### Overview

Mr. Ontl is an environmental planner with 4 years experience in the ecological research and environmental consulting fields. Mr. Ontl's experience as a field manager and technician for regulatory biology and environmental compliance projects includes plant community restoration planning, and vegetation monitoring and surveys. Mr. Ontl has prepared technical sections of environmental impact statements (EIS) and agency resource management plans, National Environmental Policy Act (NEPA) documentation.

### Project Specific Experience

**Environmental Planner, Wetlands Park Habitat Enhancement and Restoration Plan, Clark County, NV:** Responsibilities include assisting development of a habitat restoration plan for the Clark County Wetlands Park. This includes authoring technical sections for irrigation planning and trail obliteration and reclamation approaches.

**Environmental Planner, TriCounty Resource Management Plans (RMPs) and EIS, BLM Las Cruces District Office:** Technical author of several Environmental Consequences narratives for the RMPs/EIS. Responsibilities include analysis of impacts to vegetation and livestock grazing resources for management alternatives.

**Project Coordinator and Environmental Planner, SR74 Right-Of-Way Preservation, Arizona Department of Transportation, Phoenix, Arizona:** Responsibilities include coordinating the development of the environmental documentation and preparing technical documents for environmental clearance.

**Environmental Planner, Layton Wash, City of Phoenix:** Conducted fieldwork as part of a Jurisdictional Delineation Report for a proposed channelization project. Responsibilities included field reconnaissance, plant inventory, jurisdictional delineation of a desert washes.

**Project Manager, Multiple Projects, Phoenix, Arizona:** Responsible for reviewing and evaluating applications, facility files, supplemental correspondence, and recommendations from hydrological, engineering, compliance and enforcement technical reviews in order to complete water quality permitting projects. Other tasks included maintaining records of all permit activities and generating permit management letters and technical reports.

**Biologist / Data Specialist, Multiple Projects, Boulder, Colorado:** Responsible for plant identification and vegetation data collection in a variety of vegetation types including grasslands, shrublands, montane forest, and wetlands throughout the western U.S. Lead field crews of summer technicians in collecting vegetation data for the purpose of assessment of reclamation and baseline vegetation conditions, and management of both restored and native plant communities for City and County Parks and Open Space properties.

### Areas of Expertise

Plant Community Restoration

Vegetation Surveys and Monitoring

National Environmental Policy Act

Jurisdictional Delineations

Environmental Clearances for  
Transportation Projects

### Years of Experience

With URS: <1 Year

With Other Firms: 7 Years

### Education

MS/Rangeland Ecosystem Science/2006/  
Colorado State University, Fort Collins,  
Colorado

BS / Microbiology / 1996 / University of  
Iowa, Iowa City, Iowa





Accomplished projects with local, state, and federal agencies on vegetation restoration and management projects, including restoration planning and oversight of project design implementation. Other tasks included data processing, inventory, statistical analysis, and preparation of technical reports for clients.

As a Summer Field Technician responsibilities included assisting in the collection of quantitative vegetation monitoring data. Worked under adverse conditions and in remote locations requiring travel in both 4 wheel drive vehicles and ATVs. Utilized handheld GPS units in the field to locate/ relocate sample plots.

**Graduate Research Assistant, Multiple Projects, Fort Collins,**

**Colorado:** Designed and implemented a study analyzing the cost-effectiveness of restoration treatments at meeting National Park Service (NPS) vegetation restoration management objectives; lead crew of field assistants in quantitative collection of vegetative cover data on disturbed and undisturbed sites in grassland, shrubland, forest, and wetland sites occurring at various elevations from montane to alpine habitats in Rocky Mountain National Park, Colorado. Performed statistical analysis of and authored technical reports detailing results of studies to NPS managers, and presented results at research conferences. Also assisted in the preparation of the NPS guidance document "Vegetation Restoration Management Plan" for Rocky Mountain National Park. Coordinated efforts between researchers and park managers in setting up long-term monitoring protocols to evaluate restoration and exotics control measures. Lead an invited training session on plant community restoration for NPS staff.

**Laboratory Manager/Research Associate, Multiple Projects, Fort**

**Collins, Colorado:** Managed the daily operations of a two different research laboratories including all ordering of supplies, disposal of hazardous and radioactive wastes, equipment maintenance and repair, and supervising of graduate and undergraduate student lab assistants, and management of project budgets. Completed independent research projects using a variety of molecular techniques.

**Professional Societies/Affiliates**

Society for Ecological Restoration

Society for Conservation Biology

Society of Wetland Scientists

**Awards**

1995 / REU Fellowship / National Science Foundation

2005 / College of Natural Resources Supplemental Fellowship /  
Colorado State University

**Quotations**

N/A

**Languages**

English



## **Specialized Training**

2005 / 24-hr New Miner Training / Mine Safety and Health Administration, U.S. Department of Labor

2006-7 / 8-hr Annual Refresher Training / Mine Safety and Health Administration, U.S. Department of Labor

## **Security Clearance**

N/A

## **Publications / Presentations**

- Ontl, T. A. & E. F. Redente. 2008. "Cost-effectiveness analysis of restoration treatments in Rocky Mountain National Park, CO" Ecological Restoration. *In Prep*
- Ontl, T. A., H Schaafsma, S. J. Hall, & J. M. Briggs. "Legacies of prehistoric agriculture on herbaceous plant community composition in a desert grassland." Ecological Society of America/ Society for Ecological Restoration Joint Meeting, San Jose, CA, August 5-10, 2007.
- Ontl, T. A. "Restoration in Rocky Mountain National Park: Successes and failures." Invited Restoration Training Session, Rocky Mountain National Park, Estes Park, CO. May, 21, 2007.
- Ontl, T. A. and E. F. Redente. "Cost-Effectiveness analysis of restoration approaches in Rocky Mountain National Park." Biennial Rocky Mountain Research Conference, Rocky Mountain State Park, April 4-5, 2006.
- Ontl, T. A. and E. F. Redente. "Success and cost-effectiveness of restoration treatments in Rocky Mountain National Park, CO." Seventeenth High Altitude Revegetation Workshop, Colorado State University, March 8-9, 2006.

## **Chronology**

9/07 – Present: URS Corporation, Phoenix, Arizona

03/07 – 09/07: Arizona Department of Environmental Quality,  
Phoenix, Arizona

05/05 – 02/07: ESCO Associates, Boulder, Colorado

02/00 – 05/06: Colorado State University, Fort Collins, Colorado

## **Contact Information**

URS Corporation

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Phoenix, AZ 85020

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Direct: 602-648-2377

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Todd\_Ontl@URSCorp.com



## Laura Rizzo

*Environmental Scientist*

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### Overview

Ms. Rizzo graduated cum laude from Purchase College, State University of New York with a B.A. in Environmental Science and a Minor in Visual Arts. She completed an undergraduate thesis on a native lily of New York, listed as a threatened species, *Chamelirium luteum*, and its responses to canopy removal. Ms. Rizzo has experience with biological monitoring, water quality testing, Geographic Information Systems and natural history education. Her position at URS involves vegetation surveys and mapping, wildlife surveys and database management.

### Areas of Expertise

General Wildlife Surveys  
Database Management  
Avian surveys  
Vegetation Surveys  
GPS and GIS mapping  
CEQA Planning/Permitting

### Years of Experience

With URS: <1 Year  
With Other Firms: <1 Year

### Education

BA/Environmental  
Science/2005/Purchase College  
SUNY

### URS Experience

#### **Staff Biologist for Wetland Delineation, Newhall Ranch, CA.**

Performed protocol USACE Wetland Delineation survey to assess habitat and delineate jurisdictional wetlands. Tasks included completing datasheet forms, reviewing graphics and writing report sections.

**Staff Scientist for Moreland Drainage Ditch Channel Maintenance, Ventura, CA.** Collected data through research and fieldwork to be used in acquiring permits. Permits included CDFG Section 1600, Corps of Engineers Section 404 and RWQCB Section 401.

**Field Biologist for Santa Barbara Airport Air Strike Surveys, Santa Barbara, CA.** Performed weekly and biweekly surveys to assess bird usage of tidal and non-tidal basins in correlation with flight patterns over the airfield.

**Field Biologist for Blunt-nosed Leopard Lizard Survey, Carrizo Plains, CA.** Performed protocol survey to assess habitat quality for the Federally and State Endangered Blunt-Nosed Leopard Lizard.

**Field Biologist for Santa Barbara Airport Breeding Bird Surveys, Santa Barbara, CA.** Searched for nests and evidence of breeding birds in grassland and coastal sage scrub habitat prior to construction and vegetation clearing. Staked required 300 foot buffer zones around each active nest.

**Field Biologist for Solar One Project, Mojave Desert, CA.** Surveyed for the Federally and State Threatened desert tortoise within the 6,900-acre study area. Followed the US Fish and Wildlife tortoise survey protocol, primarily working in pairs or groups of three documenting sightings or any evidence of their presence.

**Database Assistant for the Ventura County Watershed Protection District, Ventura, CA.** Organized data and constructed a catalog of facilities, including best management practice codes, physical features (including photos and maps) and possible sensitive species for each



maintained facility. Catalog of facilities will be used by maintenance crew as a reference manual for all facilities that require any type of annual maintenance and debris removal.

**Field Assistant for Santa Barbara Airport Restoration Project, Santa Barbara, CA.** Recorded vegetation on transects as part of an ongoing monitoring project of seven restored areas within the airport, including various ecosystems. Documented restoration progress and assisted in pre-construction bird nest monitoring and annual report writing.

## **Relevant Experience**

### **Biological Monitor for Garcia and Associates; Lompoc, CA.**

Monitored the threatened Gaviota tar plant during water pipeline installation. Recorded daily events and reported any disturbances to supervisors.

### **Water Quality Intern for Teatown Lake Nature Preserve, Ossining, New York.**

Ran water assessment testing for Chemical, Physical and Biological analysis. Taught day programs at the nature center (i.e. Maple Sugaring and Egg to Chick) and outreach programs. Planned annual student water quality conference for local schools within the watershed. Created informative posters and T-shirts for upcoming events. Researched and successfully found eco-friendly and local businesses to sponsor events.

### **Teacher's Assistant for Water Quality Science Class; Mahopac High School, Mahopac, New York.**

Assisted in planning of a local wetland restoration project, including landscape design, data collection, running biological assessments using Leaf Packs and general student education. Helped implement Trout in the Classroom (TIC) Program and followed through to completion where trout were released. Organized outreach program with schools within the watershed.

### **Advertising Intern for E/The Environmental Magazine; Norwalk, Connecticut .**

Completed online research for various eco-friendly products and services. Prepared media kits, contacted clients and customers and updated web site.

## **Professional Societies/Affiliates**

- AEP (Association of Environmental Professionals)
- NYSDEC: Project Learning Tree, Project WILD, Project Aquatic WILD, Project WET

## **Awards**

May 2005: Graduated Cum Laude from SUNY Purchase College, NY  
June 2000 Regents Diploma and National Honor Society  
New Rochelle High School -New Rochelle, NY



### **Languages**

Italian - Fluent

Spanish - Conversational

### **Specialized Training**

American Red Cross CPR/AED (January 19, 2007)

American Red Cross First Aid (June 5, 2007)

1 year GIS Education: SUNY Purchase College, NY

2000-2005/Course work in Environmental Science, Ecology, Geology, Biology, and Mathematics

### **Chronology**

2007 to present: URS Corporation

2005: Garcia and Associates

### **Contact Information**

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<b>Areas of Expertise</b>	Wildlife Biology, Biological Monitoring, Biological Resource Assessment, Desert Tortoise Surveys, Burrowing Owl Surveys, and Flora and Fauna Identification
<b>Years of Experience</b> URS	3.0
<b>Education</b>	B.S./ 2006/ Marine Biology/ California State University, Long Beach B.S./ 2006/ Zoology/ California State University, Long Beach Minor/ 2006/ Chemistry/ California State University, Long Beach
<b>Overview</b>	Mr. Pugh has had years of experience working both in the field and in the laboratory. His professional accomplishments include work in the biological assessment and identification of flora and fauna, vegetation mapping, biological monitoring, and a working knowledge of the preparation of biological documents in compliance with CEQA, California Coastal Act, California Department of Fish and Game Code, ACOE and other relevant legislation.
<b>Certifications, Classes, Seminars, Workshops, and Special Training</b>	<ul style="list-style-type: none"> <li>• California Anostraca and Notostraca (Fairy Shrimp) Identification Class. January 30 – February 1, 2007. Certified February 9<sup>th</sup>, 2007 by USFWS.</li> <li>• Desert Tortoise Council: Surveying, Monitoring, and Handling Techniques Workshop. November 4 &amp; 5, 2006.</li> <li>• Introduction to Birding Workshop: Instructor, Sylvia Gallagher (Audubon Society). September 2006 – December 2006.</li> <li>• <i>Caulerpa taxifolia</i> Identification Certification under the Caulerpa Control Protocol. Certified February 12<sup>th</sup>, 2007 by U.S. Department of Commerce, National Marine Fisheries Service.</li> </ul>
<b>URS Project Experience</b>	<ul style="list-style-type: none"> <li>• <b>Staff Biologist, CalNev Petroleum Pipeline Desert Tortoise Presence/Absence Surveys.</b> Field Biologist for an approximately 250-mile-long petroleum pipeline. Performed protocol desert tortoise surveys in the spring of 2008.</li> <li>• <b>Staff Biologist, CalNev Petroleum Pipeline Riparian Bird Surveys.</b> Field Biologist assisted with least Bell's vireo (<i>Vireo bellii pusillus</i>) and southwestern willow flycatcher (<i>Empidonax traillii extimus</i>) surveys in appropriate habitat along an approximately 250-mile-long petroleum pipeline (i.e., the Cajon Pass and Mojave River) with permitted biologist Brian Lohstroh (TE-063608-3).</li> <li>• <b>Staff Biologist, CalNev Petroleum Pipeline Rare Plant Surveys.</b> Field Biologist for an approximately 250-mile-long petroleum pipeline. Performed protocol rare plant surveys in the spring of 2008.</li> <li>• <b>Staff Biologist, BNSF Mojave Subdivision Tehachapi Pass Double Track Project.</b> Field Biologist conducted protocol surveys for least Bell's vireo (<i>Vireo bellii pusillus</i>) and southwestern willow flycatcher (<i>Empidonax traillii extimus</i>) in appropriate habitat along approximately 8.21 miles of UPRR-maintained train tracks with permitted biologist Brian Lohstroh (TE-063608-3).</li> </ul>

- **Staff Biologist, Solar II Rare Plant Surveys, Imperial County, CA.** Field Biologist for a 7000-acre solar/thermal generating facility. Performed protocol rare plant surveys in the spring of 2008.
- **Staff Biologist, Dana Point Headlands and Fairview Park Coastal Sage Scrub Restoration Monitoring, Orange County, CA.** Conducted numerous plant transect measurements to assess the success of restoration efforts at two locations in Orange County. Spring 2007 & spring 2008.
- **Staff Biologist, AUSRA Blunt-nosed Leopard Lizard Presence/Absence Surveys, San Luis Obispo County, CA.** Field biologist for conducting focused surveys for blunt-nosed leopard lizard over roughly two (2) square miles of fallow agricultural land in the Carrizo Plains. Spring and summer of 2007 and 2008.
- **Staff Biologist, Solar I Desert Tortoise Presence/Absence Surveys, San Bernardino County, CA.** Field Biologist for a 15,000 acre solar/thermal generating facility. Performed protocol desert tortoise surveys, vegetation community mapping, rare plant surveys, and Waters of the US and state delineations. Spring and summer 2007.
- **Staff Biologist, Solar II Flat-Tailed Horned Focused Surveys, Imperial County, CA.** Field Biologist for a 7000-acre solar/thermal generating facility. Performed protocol Flat tail horned lizard surveys, vegetation community mapping, rare plant surveys, and Waters of the US and state delineations. Spring and summer 2007.
- **Staff Biologist, Fairmont Avenue Extension Project Nesting Bird Surveys and Construction Monitoring, Los Angeles County, CA.** Conducted clearance nesting bird surveys for a road extension project over a jurisdictional tributary to the Los Angeles River. Also monitored construction activities and vegetation removal within the water feature. May 2008 - July 2008.
- **Staff Biologist, First Industrial Realty: Multiple Site (15) Habitat Assessments, Burrowing Owl Surveys, and MSHCP Compliance/Consistency Document Preparation, Riverside County, CA.** Conducted preliminary habitat assessments which included vegetation community mapping, inventory of existing biological resources, and assessment of the potential for sensitive resources and jurisdictional aquatic resources to occur. Subsequent burrowing owl focused surveys were required for most of these sites per the Western Riverside County MSHCP. MSHCP consistency documents were also prepared. August 2007 – July 2008.
- **Field Team Member, Determination of Other Accrued Environmental Liabilities of U.S. Marine Corps Facilities, Southwest Facilities (2008):** Mr. Pugh was an integral field team member for a \$3.5 million effort to perform Other Environmental Liability (OEL) Surveys at all continental U.S. and Hawaii Marine Corps facilities. This project included 20-plus teams



working at several Marine Corps facilities simultaneously to collect data on over 19,000 units and estimate environmental clean-up or disposal costs for each OEL asset at the end of its useful life (e.g., environmental clean-up costs to remove an underground storage tank). Mr. Pugh was part of an intensive field effort for three of the six Marine Corps facilities located in the southwest that involved as many as 18 people collecting information at each facility within a two to three week span. Data such as asset description, expected lifecycle, global positioning points, and photos were uploaded directly into a database with extensive daily QA/QC checks performed while in the field. Mr. Pugh and the rest of the team worked efficiently and maintained an aggressive schedule to complete the \$350,000 field work task on time and under budget.

- **Staff Biologist, Mission College California Gnatcatcher (CAGN) Focused Surveys, Los Angeles County, California.** Assisted permitted biologist Rick Bailey (permit TE-101151-0) with USFWS protocol surveys for CAGN. Duties included assistance with incidental bird, reptile, mammal, and amphibian identification, as well as assistance with detecting CAGN within a 1.8-acre patch of coastal sage scrub. February 2007 – March 2007.
- **Staff Biologist, Potential Vernal Pool Assessments for Various Road Widening Projects, Riverside County, California.** Performed site assessments in which pools of standing water were evaluated as to whether or not they could support vernal pool species (i.e., fairy shrimp). Surveys were conducted at three different locations during and immediately after a recent rain storm. February 2007.
- **Staff Biologist, Santa Ana River Mitigation Bank Restoration & Remediation Action Plan, Orange County, California.** Assisted in the production of the Remediation and Restoration Plan for the Santa Ana River Mitigation Bank. Duties included site visits and assessments, consultation with our Botanist and Project Manager for remediation plans, and document production. February 2007.
- **Staff Biologist, Clinton Keith Road Widening BTR, Riverside County, California.** Performed a biological assessment of the entire road widening project footprint and prepared a biological technical report (BTR) and evaluation of potential impacts to sensitive wildlife resources. December 2006.
- **Staff Biologist, South Merced Specific Plan BTR and EIR, Merced County, California.** Assisted in the production of both the BTR and Biological Resources Section of the EIR for the South Merced Specific Plan. Duties included assessment of potential impacts to sensitive wildlife and plant species, presentation of mitigation and avoidance measures for sensitive resources with a moderate to high potential to occur within the study area, and coordination with our GIS department to produce figures depicting project baseline conditions. December 2006.
- **Staff Biologist, Beverly Boulevard Bridge Reconstruction Project Biological Monitoring, Los Angeles County, CA.** During the two-year reconstruction process of Beverly Boulevard Bridge, duties included monitoring of construction activities to ensure compliance with a California Department of Fish and Game Code 1602 Streambed Alteration Agreement, monitoring of nesting swallows relative to construction activities, removing all swallow nests prior to nest completion, conducting general surveys for bats

within the old bridge structure, and consultation with the superintendent regarding pending construction activities. February 2006 – November 2007.

- **Staff Biologist, San Bernardino County General Plan, San Bernardino County, California.** Assisted in the production of both the Biological Resources Section of the San Bernardino General Plan. Duties included assessment of potential impacts to sensitive wildlife and plant species, coordination with our GIS department to produce figures depicting County baseline conditions, and preparation of a specific and detailed report on existing wildlife corridors and potential impacts to those essential linkages. November 2006 – December 2006.
- **Staff Biologist, LBVI and CAGN Monitoring, Prima Deshecha Landfill, Sukut Construction, Orange County, California.** Monitoring of wildlife during construction within Zone 1 Phase C2 of the Prima Deshecha Landfill. Species of concern included Least Bell's Vireo (*Vireo bellii pusillus*) and California Gnatcatcher (*Poliophtila californica californica*). Duties also included monitoring of construction activities to insure their compliance with CDFG regulations. July 2006 – October 2006.
- **Staff Biologist, Dana Point Headlands Biological Monitoring, Orange County, California.** Monitoring of flora and fauna at Dana Point Headlands during construction. Duties included monitoring of construction activities to insure their compliance with CDFG regulations. This included instructing and educating workers on how to avoid native vegetation (coastal sage scrub) and sensitive wildlife species (coastal California gnatcatcher). September 2006 – October 2006.
- **Staff Biologist, Chevron Mahala Oil Field Abandonment Project, San Bernardino County, California.** Conducted pre- and post-construction surveys for an oil well abandonment project in Chino Hills, California. An assessment of biological baseline conditions and potential impacts to existing sensitive biological resources was made before consultation with the client on how to avoid sensitive biological and jurisdictional resources within the project footprint. August 2006 – November 2006.
- **Staff Biologist, BNSF Railway Construction, San Bernardino County, California.** Assisted in the Biological Assessment (BA) through literature searches and detailed species accounts. July 2006 – September 2007.
- **Staff Biologist, San Joaquin Veterans Cemetery Rodent Control.** Performed numerous in depth literature searches (i.e. scientific studies, published reports, EIR, EA, BA) for acceptable rodent control for the San Joaquin kit fox. A report was written which included possible alternatives to pesticides as well as risk assessments, biological effects, and residual uptake for varying pesticides. February 2006.

Areas of Expertise	<p>Biological Resources</p> <p>Identification of Southern California habitats, flora, and fauna</p> <p>Habitat mapping</p> <p>Protocol surveys for arroyo toad, least Bell's vireo, and burrowing owl</p>
Total Years of Experience	7
URS	1
Other Firms	6
Education	BS/2003/Biology/San Diego State University
Continuing Education	<p>2006/California Notostracan and Anostracan Identification Course and Exam</p> <p>2006/Desert Tortoise Surveying, Monitoring, and Handling Techniques Workshop</p> <p>2007/Flat-tailed Horned Lizard Survey Techniques Workshop</p> <p>2007/Blunt-nosed Leopard Lizard Survey Techniques Workshop</p>
Overview	<p>Cheryl Rustin has over seven years of relevant experience in the field of environmental consulting. She has extensive field experience in habitat mapping, general and focused wildlife and plant surveying, biological technical report production, and mitigation monitoring plan creation and implementation. Cheryl is currently a staff biologist in the San Diego office.</p>
Project Experience	<p><b>Caltrans Interstate 805 Expansion Project, San Diego, CA</b>  Created draft Natural Environment Study reports for both north and south portions of the project. Assisted with focused species surveys including least Bell's vireo, southwestern willow flycatcher, coastal California gnatcatcher, and fairy shrimp. Compiled field notes and prepared data tables and text for use in the Environmental Assessment Report. (2006-2008)</p> <p><b>Gregory Canyon Landfill Project, San Diego County, California</b>  Conducted protocol level surveys for the arroyo toad. (2007)</p> <p><b>Ausra Project, San Luis Obispo County, California</b>  Conducted a site assessment for San Joaquin kit fox, burrowing owl, and assisted with protocol surveys for the blunt-nosed leopard lizard. (2007)</p> <p><b>Solar II Project, Imperial County, California</b>  Created Biological Technical Report and NEPA Document sections. Coordinated survey teams and participated in general vegetation mapping, rare plant surveys, and wetland delineation for an approximately 8,000 acre site in the Imperial Valley. Conducted a site assessment and focused protocol surveys for flat-tailed horned lizard and burrowing owl. (2007-2008)</p> <p><b>Solar I Project and Transmission Line, San Bernardino, California</b>  Conducted protocol level surveys for the desert tortoise. (2007)</p> <p><b>Bethel Power Plant Project, Imperial County, California</b>  Conducted habitat assessments for burrowing owls. (2007)</p> <p><b>Dana Point Headlands Project, Dana Point, California</b>  Assisted with protocol California gnatcatcher surveys under the supervision of a permitted biologist. (2007)</p>

	<p><b>Niland Power Plant Project, Niland, California</b>  Conducted site assessment for burrowing owls. Participated in the scoping and collapsing of burrows. Composed script for construction team training video. (2007)</p> <p><b>FEMA Projects, Victorville, Monrovia, Newport Beach, California</b>  Conducted environmental assessments of repair projects requesting funding through the FEMA program. (2006-2007)</p> <p><b>Kinder Morgan CALNEV Project, Colton, California to Las Vegas, Nevada</b>  Assisted with the preparation of a Feasibility Study for several proposed routes in California, Arizona, and Nevada. (2006)</p> <p><b>Clean Harbors Landfill Expansion, Westmorland, California</b>  Conducted habitat assessments for flat-tailed horned lizard and western burrowing owl and prepared associated report for client. (2006)</p> <p><b>Travel Plaza, Otay Mesa, California</b>  Conducted protocol level surveys for the burrowing owl. (2006)</p> <p><b>Champagne Lakes, Valley Center, California</b>  Performed protocol level surveys for the arroyo toad. (2006)</p> <p><b>Montecito Ranch, Ramona, California</b>  Performed extensive general and focused plant and wildlife surveys and habitat mapping. Assisted with wetland delineation and vernal pool identification. (2000-2006)</p> <p><b>Passerelle, Pala, California</b>  Performed extensive general and focused plant and wildlife surveys and habitat mapping. Focused surveys performed included least Bell's vireo and arroyo toad. (2003-2005)</p> <p><b>Pappas, Pala, California</b>  Performed protocol level surveys for the least Bell's vireo and arroyo toad. (2004)</p> <p><b>Barrett Junction, California</b>  Performed protocol level surveys for the least Bell's vireo and arroyo toad. (2004)</p>
Professional Associations	<p>Golden Key International Honour Society  Horned Lizard Conservation Society  Anza Borrego Desert Foundation  Desert Tortoise Council</p>

<b>Areas of Expertise</b>	<p>Biological Resources          Aquatic, Terrestrial, and Wetland Biology/Ecology          Plant Physiological Ecology          Sensitive Species Surveys and Habitat Assessment</p>
<b>Total Years of Experience</b>	3
URS	1
Other Firms	0
<b>Education</b>	<p>BS/2003/Biology/Loyola University Chicago          MS/2007/Environmental Health Sciences; Environmental Biology/UCLA</p>
<b>Supplemental Education/Training</b>	<p>Wetland Delineation Training, Wetland Training Institute (2007)          FTHL Protocol Training Workshop, Bureau of Land Management (2007)</p>
<b>Overview</b>	<p>Shanti Santulli has an education and research background in aquatic and plant ecology. Recent research and work experience include determining the water loss due to transpiration of the invasive species <i>Arundo donax</i> along the Santa Clara River. Shanti also has experience in technical report production, statistical analysis, and project coordination. Currently, she conducts biological resource surveys including vegetation mapping, habitat assessment, and rare plant and animal surveys as well as being proficient at wetland delineations and preparing Jurisdictional Determinations. She is currently a staff biologist in the San Diego Office.</p>
<b>Project Experience</b>	<p><b>Projects</b></p> <p><b>County of San Diego, Woodside Avenue Drainage Project.</b> Performed vegetation mapping and wetland delineation for a project proposing to replace and existing drainage system. Also prepared the draft biology technical report and initial mapping. (2008)</p> <p><b>City of San Diego, Mira Sorrento Place Revegetation Monitoring.</b> Prepared Year 2 Monitoring Report for the upland habitat revegetation plan for a road-widening project at Mira Sorrento Place. Also visited site for quarterly revegetation monitoring. (2008)</p> <p><b>Kinder Morgan California-to-Nevada (Cal-Nev) Pipeline – Mojave Desert of California and Nevada.</b> Field biologist conducting desert tortoise presence/absence surveys over several different sections of a 233-mile fuel pipeline project from Colton, CA to Las Vegas, NV. Other duties included leading desert tortoise survey crews and assisting with least Bell's vireo and Mojave Ground Squirrel surveys. (2008)</p> <p><b>Solar One Energy Project AFC – Barstow, CA.</b> Biologist assisting with desert tortoise surveys in support of an Application for Certification (AFC) for a solar power plant project in San Bernardino County. Completed Biological Resources and AFC reports for submission. Project involved intensive surveys for desert tortoise, Mohave ground squirrel, and rare plants on a 16,000-acre project site and 100-mile transmission line. (2007-2008)</p> <p><b>SANDAG/I-805 Widening Project</b>          Co-conducted sensitive species surveys including least Bell's vireo, California gnatcatcher, and southwestern willow flycatcher along a 1000-foot buffer for the</p>

expansion of I-805 from the Mexican Border to the 805/I-5 merge in San Diego, CA. Assisted in preparing the Biological Resources Report including biological impacts. (2007-2008)

**Ausra, Inc. 180MW Solar Power Plant AFC – San Luis Obispo County, CA.**

Field biologist/crew leader conducting focused presence/absence surveys for adult and juvenile blunt-nosed leopard lizards over roughly two (2) square miles of fallow agricultural land near the Carrizo Plains. Performed vegetation mapping and habitat assessment at location. Surveys are in support of an Application for Certification for an 180MW thermal generating facility located within San Luis Obispo County. Once licensed, this project will likely be the first utility-scale solar power project under the CEC in California. (2007-2008)

**Directoría de Desarrollo Comunitario**

In charge of wetland delineation, Jurisdictional Determination, and Joint Permit Application for submission to USACE for a proposed Multipurpose Center in the community of El Maní. (2007)

**The Puerto Rico Highway and Transportation Authority (PRHTA)**

Completed wetland delineation, Jurisdictional Determination, and Joint Permit Application for submission to USACE for a proposed road extension, “Conector Las Piedras.” (2007)

**City of San Diego, Coastal Rail Trail.** Coordinated and conducted vegetation mapping, habitat assessment, rare plant, least Bell’s vireo, and California gnatcatcher surveys within project area in San Diego, CA. (2007)

**Solar Two Energy Facility AFC and EIS -- Imperial County, CA.** Field biologist conducting vegetation mapping and flat-tailed horned lizard habitat assessment at location in Plaster City, CA. Also received training and conducted FTHL protocol surveys. The project purpose is the Application for Certification for an 800MW thermal generating facility located within Imperial County. The project will cover 7,000 acres and will include 12,000 – 36,000 solar dishes at location in Plaster City, CA. (2007)

**Gregory Canyon Landfill.** Assisted in arroyo toad surveys and biotechnical report production. Produced GPS Photolink and Google Earth images of surveys. (2007)

**Research**

M.S. Thesis Project: UCLA. “The Potential Impact of the Invasive Species *Arundo donax* on Water Resources along the Santa Clara River: Seasonal and Diurnal Transpiration.” Field study determining the water loss due to transpiration of *Arundo donax* for each season in two different soil moisture regimes. Statistical analysis of results. In preparation for publication. Advisor: Richard Ambrose, Ph.D. (2004 – 2007)

Field studies on the invasive species, *Arundo donax*, along the Santa Clara River under the direction of Gretchen Coffman, Ph.D. candidate at UCLA. Research methods: soil sampling, measuring plant growth and biomass, soil grain analysis,

	<p>observing competition with native species. <b>(2004 – 2005)</b></p> <p>Data entry, figure and table production, and statistical analysis for: Ambrose, R.F., R.R. Vance, N. Wenner. 2006. Wetland Restoration Monitoring Report for Navy Base Ventura County, Mugu Lagoon: July 2001 to September 2005. Report to the Naval Station Ventura County, Point Mugu. <b>(2006)</b></p> <p>Undergraduate Research: Loyola University Chicago. “Elevated Atmospheric CO<sub>2</sub> Effects on Predatory Fish in Detritus Based Ecosystems.” Advisor: Nancy Tuchman, Ph.D. <b>(2001 – 2003)</b></p>
<b>Awards</b>	<p>2002 and 2003 Loyola University Chicago Department of Biology Certificate of High Achievement for the presentation of the Research Project entitled “Elevated CO<sub>2</sub> Effects on Predatory Fish in Detritus Based Ecosystems.”</p>
<b>Publications</b>	<p>Abstract: Tuchman, N.C., B. Swedo, S. Abichandani, S.T. Rier, and R.G. Wetzel. 2002. Elevated atmospheric CO<sub>2</sub> alters leaf nutritional quality: Impacts on three trophic levels in detritus based aquatic food webs. Abstract for 50th Annual meeting, North American Benthological Society, Pittsburgh, Pennsylvania. (06/2002)</p>



# Aaron Schusteff

# Botanical Consultant

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## EDUCATION/TRAINING

Ph.D in Mathematics (UCLA 1990)  
B.A. in Mathematics (UCSC 1983) \*Graduated with highest honors

## BOTANICAL/ECOLOGICAL EMPHASIS

California Academy of Sciences: Courses w/ Dr. Glenn Keator during 1998-2001 in:

Plant Identification; Asteraceae; Conifers of California; Evolution of Flowering Plants; numerous Spring & Summer Field Botany Courses studying various habitats throughout California.

Jepson Herbarium Workshops:

Eriogonum	w/ Jim Reveal	June 2007
Chorizanthe	w/ Jim Reveal	April 2007
Flora of Convict Lake Region	w/ Dean Taylor	July 2005
Describing New Plant Species	w/ Barbara Ertter	March 2004
Flora of the Central Sierra	w/ Jim Shevock	June 2003
Pollination Ecology	w/ Robbin Thorp & Gordon Franke	May 2002
Molecular Systematics with Emphasis on California Flora	w/ Bruce Baldwin & Brent Mischler	March 2002

San Francisco State University (Sierra Nevada Field Campus):

Flora of the Northern Sierra Nevada	w/ Bob Patterson	June 2007
Insect Biology and Identification	w/ John Hafernik	July 2007

Vegetation Survey Training Workshops:

Pinnacles NM BioBlitz: April 2007 (Sharon Franklet, National Park Service)  
Fort Ord Vegetation Sampling Training: Sept 2007 (Julie Evens, CNPS)

CNPS Events:

Sierra Sojourn (Bristlecone Chapter) in Owens Valley, June 2001 and May 2005  
Wildflower Weekend (San Gabriel Chapter) in San Bernadino Mnts, May 2006  
... and **many, many** local field trips and other events w/ numerous chapters:  
Santa Cruz, Monterey, Santa Clara, Marin, Yerba Buena, Bristlecone, Sanhedrin, Napa, Kern, Mojave, Los Angeles-Santa Monica.

## SKILLS AND EXPERIENCE

Unusually broad knowledge of the California flora w/ substantial experience in the Mojave region; strong observational, writing, verbal, analytical and organizational skills with attention to detail; ability and desire to work as part of a team as well as independently; excellent map reading skills; many years of computer experience—working with a wide range of software including spreadsheet, database and GIS...aptitude to learn and master new tools.

Skilled photographer w/ large plant photo collection — partial sample (including many Mojave species) can be viewed at:

[http://calphotos.berkeley.edu/cgi/photographer\\_query?&where-name\\_full=Aaron+Schusteff](http://calphotos.berkeley.edu/cgi/photographer_query?&where-name_full=Aaron+Schusteff)

## REFERENCES

Bruce Delgado	(831) 394 - 8314	bdelgado@blm.gov
Steve Edwards	(510) 841 - 8732	SEdwards@ebparks.org
Ken Himes	(650) 591 - 8508	(No email account! ☺)
Doreen Smith	(415) 479 - 7888	dsmith@lvha.net



## Cristina Slaughter

*Biologist*

### Areas of Expertise

- California Red-legged Frog USFWS Protocol Surveys
- Desert Tortoise USFWS Protocol Surveys
- Biological Assessments
- Vegetation/Rare Plant surveys
- General Wildlife Surveys and Habitat Assessment
- Stream monitoring / Habitat typing
- Endangered Species Surveys
- Construction Compliance and Monitoring
- GPS and GIS mapping
- Fish Relocation

### Skills and Certifications

- Attended the Desert Tortoise Handling Workshop in 2002
- Previously approved USFWS desert tortoise handler in 2003
- CDFG Scientific Collecting Permit 2005-2008
- Previously approved by USFWS to handle California Red-Legged Frogs (1999-2001, 2005-2006) and Arroyo Toads (1999-2001)

### Years of Experience

With URS: 2.5 Years

With Other Firms: 10 Years

### Education

BA/Aquatic Biology/1994/  
University of California,  
Santa Barbara

### Overview

Ms. Slaughter's combined work experience and education provide a wide range of ecological training. She has over eight years of experience working in the fields of wildlife, botany, fisheries, and ecosystem inventory, assessment, and monitoring. She has also done environmental compliance monitoring for construction projects in federally protected species habitat (California red-legged frogs and San Francisco garter snake). On previous projects she has been approved by the USFWS to handle these federally listed species; California red-legged frog, southwestern arroyo toad, and desert tortoise. Ms. Slaughter's position at URS involves wildlife surveys (California red-legged frogs, tidewater goby, and desert tortoise), endangered species habitat assessment, vegetation and stream monitoring, habitat restoration, fish relocation and database management.

### URS Experience

#### Habitat Restoration

- **Restoration Coordination for Santa Barbara Airport, Santa Barbara, CA.** Assisted in planning and implementing restoration for 65 acres of wetland, coastal sage scrub, and riparian habitats. Participated in monitoring program consisting of point-intercept transect data collection and maintenance monitoring. Authored annual reports detailing restoration success.

#### Wildlife Surveys

- **Field Supervisor for Desert Tortoise and General Wildlife Surveys, Johnson Valley, CA.** 300 hours. Supervised field crew of 5-15 biologists performing USFWS protocol 100% coverage desert tortoise surveys on a 14-square mile site in Johnson Valley, California. Surveys took place over an 8 week period in the spring of 2008. Responsibilities included training employees on survey techniques and the identification of desert tortoise sign, coordination of field crews and subcontractors, agency coordination, and database management. (April and May 2008).
- **Desert Tortoise Survey, Blythe, CA.** 40 hours. Performed USFWS protocol 100% coverage desert tortoise surveys on a 240 acre site in Blythe, California. Responsibilities included training employees on survey techniques and the identification of desert tortoise sign, preparation of reports, agency consultation, and database management. (March 2008).
- **Tidewater Goby annual surveys for Santa Barbara Airport, Santa Barbara, CA.** 60 hours. Performed USFWS protocol surveys for tidewater goby in Tecolotito and Carneros Creeks on Santa Barbara



Airport property and authored annual report on status of tidewater goby in these creeks (May and August 2007).

- **Desert Tortoise Survey, Mojave Desert, CA.** 40 hours. Performed survey to assess habitat quality for desert tortoise. Mapped, photographed, and cataloged habitat suitability and vegetation types (April 2007).
- **Tidewater Goby and Fish Relocation for City of Santa Barbara, Santa Barbara, CA.** 11 hours. Captured and relocated tidewater gobies and other fish species from Laguna Channel, Santa Barbara. Coordinated preparation and post-project clean up of field gear. Monitored construction activities to prevent impacts to tidewater goby (October 2006).
- **Tidewater Goby and Fish Relocation for Santa Barbara Airport, Santa Barbara, CA.** 85 hours. Captured and relocated tidewater gobies and other fish species from Tecolotito and Carneros Creeks. Performed tidewater goby surveys in all locations prior to relocation. Managed data collection and compilation. Coordinated preparation and post-project clean up of field gear (August 2006).
- **California red-legged frog surveys for FEMA project on the Cal Poly San Luis Obispo campus, CA.** 60 hours. Conducted day and night surveys on the creeks and ponds of the Cal Poly San Luis Obispo campus according to USFWS California red-legged frog survey protocols (June and July 2006).
- **Tidewater Goby and Fish Relocation for County of Santa Barbara, Santa Barbara, CA.** 20 hours. Captured and relocated tidewater gobies and other fish species from Arroyo Burro Creek, Santa Barbara (July 2006).

#### **Biological Assessments/Reports**

- Prepared Biological Assessments for Section 7 consultation with USFWS and NMFS for several FEMA projects in Northern California. Conducted site visits to determine the effects of FEMA funded projects on endangered species and their habitats. These site visits were conducted in Santa Cruz, San Mateo, Marin, and Sonoma counties.

#### **Project Specific Experience**

- **Environmental Inspector/ Monitor, Opus Environmental Consultants, Palo Alto, Ca.** Environmental Inspector/ Monitor for PG&E transmission line construction project in sensitive species habitat (San Francisco garter snake and California red-legged frog). I was authorized by the USFWS to handle and relocate California red-legged frogs during this project.

- **Rare Plant and Wildlife Surveyor and Biological Monitoring, Bioresource Consultants, Ojai, Ca.** Conducted rare plant, wildlife and sensitive habitat surveys throughout Southern California for Edison construction projects on private and federal land. Areas surveyed include Angeles National Forest, San Bernardino National Forest, Antelope Valley, Mojave Desert and Sierra Nevada foothills. Responsibilities include writing reports summarizing survey results.
- **Rare Plant and Wildlife Surveyor and Biological Monitoring, Bioresource Consultants, Ojai, Ca.** Conducted rare plant, wildlife and sensitive habitat surveys and biological monitoring for a hazardous tree removal project in the San Bernardino Mountains along Edison power line corridors. Responsibilities included identification of rare plants and sensitive wildlife habitat found in various locations throughout the San Bernardino mountain communities.
- **Biological Monitor, TRC Consultants, Santa Barbara, Ca.** Environmental compliance monitor of horizontal directional drilling construction activities under three creeks in Montecito, California for Level 3 fiber optics.
- **Rare Plant and Wildlife Surveyor, Bioresource Consultants, Ojai, Ca.** Conducted rare plant and wildlife surveys in the Angeles and Los Padres National Forests. Responsibilities included identification of rare plants and sensitive wildlife habitat found in various locations throughout the forests. I recorded an inventory of plants found in a 20 foot radius of Edison power poles and entered this information into a database and created a plant species code list for all plants observed on forests. Other responsibilities included planning and coordinating field crew supplies and surveys.
- **Desert Tortoise Survey Crew Member and Line Distance Sampling, Kiva Biological Consulting, Inyokern, Ca.** Conducted desert tortoise surveys using line distance sampling protocols developed for desert tortoises in the Mojave Desert. This work included handling of desert tortoises under the supervision of U.S. Fish and Wildlife approved handlers for the purpose of weight measurement and health assessment. The work also included seven field days spent looking for wild desert tortoises to attach radio transmitters for focal surveys. I assisted in attaching radio transmitters to tortoises and testing radio telemetry equipment. I handled 35 desert tortoises during the two-month field season and became an approved desert tortoise handler on this project by the end of the field season.
- **Raptor Mortality Surveyor, Bioresource Consultants, Ojai, Ca.** Conducted surveys under Edison power poles for electrocuted raptors in the Central Valley and Oxnard plains. I collected data on observed bird mortalities and power pole equipment.
- **Desert Tortoise Survey Crew Member, Bioresource Consultants, Ojai, Ca.** Conducted 100% coverage and zone of influence surveys for desert tortoise in selected areas of 29 Palms Marine Base in the Mojave

Desert. This work required identification of desert tortoise sign including scat, burrows, tracks, and carcasses.

- **Desert Tortoise Survey Crew Member, Chambers Group, Irvine, Ca.** Conducted desert tortoise surveys using line distance sampling protocols developed for desert tortoises in the Mojave Desert. This work included some handling of desert tortoises under the supervision of U.S. Fish and Wildlife approved handlers for the purpose of weight measurement and health assessment. Other skills developed included identification of tortoise burrows, scat and carcasses. GPS were used to mark tortoises and transect location.  
5/3/02-5/5/02 One weekend was spent radio tracking southwestern pond turtles on the San Gabriel River in Angeles National Forest. I participated in radio tracking pond turtles and changing radio transmitters.
- **Biological Monitor for Level 3 Fiber Optic Construction, Chambers Group, Irvine, Ca.** As a biological monitor representing the Chambers Group, my duties included conducting pre-construction surveys for sensitive species (red-legged frog, steelhead trout, Gaviota tarplant and tidewater goby) and their associated habitats. I also monitored construction activities along the railroad right of way in Santa Barbara and Ventura Counties to ensure environmental compliance. Much of the work took place near biologically sensitive areas where federally listed species and their habitats were present. Biological monitoring required knowledge of compliance issues with regards to federally listed species and habitat, identification of these species, and communication with construction crews on avoidance of impacts to these species and habitats. The species present in the areas I worked included California red-legged frog, steelhead trout, tidewater goby, southwestern pond turtle, tiger salamander, Gaviota tarplant, and snowy plover. I worked with a botanist to identify Gaviota tarplants and helped create construction exclusion areas to avoid impacts to identified Gaviota tarplants.
- **Biological Technician. Los Padres National Forest, Santa Barbara Ranger District, Santa Barbara, Ca.** My duties as a member of the fish survey crew concentrated on field surveys for federally listed Steelhead trout populations found in the Los Padres National Forest. The populations of concern include the threatened South-Central California Coast Steelhead trout and the endangered Southern California Steelhead trout. The purpose of this work was to identify and map areas within the forest where these species and their habitats occur, as well as identify potential habitat and impacts to these species. The work was conducted during camping trips to anadromous stream sites within the forest selected by fisheries and wildlife biologists. Responsibilities include the coordination of field outings, data entry, maintenance of field equipment, and communication with resource personnel to determine survey needs. As a member of the crew I assisted in the creation of reports incorporating the data collected in the field. The methods I have participated in to identify habitat and detect

listed Steelhead trout species include snorkeling surveys, habitat typing using standard protocols, aquatic invertebrate sampling, water chemistry analysis, fecal coliform sampling, fish passage barrier analysis, and spawning/redd surveys. I have also had GPS training and used GIS (Arcview) for data entry and to create layouts incorporating our data from the field.

- **Biological Technician. Los Padres National Forest, Santa Lucia Ranger District, Santa Maria, Ca.** My duties as a biological technician on the herpetology crew concentrated on field surveys for federally listed amphibian species throughout the Los Padres National Forest. The primary species of concern are the threatened California red-legged frog and the endangered southwestern arroyo toad. The purpose of this work was to identify areas within the forest where these species and their specialized habitats occur, monitor these populations, and identify any potential impacts to these species. The work was conducted during camping trips to sites within the forest selected by the wildlife biologists. The methods used for detection of amphibian species include day surveys to identify suitable habitat for red-legged frogs and/or southwestern arroyo toads, and identification of tadpole and egg masses species. The amphibian surveys also include night surveys using lamps to locate the animals by eyeshine and determine the species by sight and call. I have also participated in biological monitoring of construction projects on the forest in areas where red-legged frogs were present. Further responsibilities include radio-tracking a population of California red-legged frogs on the Santa Ynez River to determine seasonal habitat utilization and training lower grade employees on radio-tracking techniques. I was authorized to handle both California red-legged frogs and southwestern arroyo toads through a Forest Service permit issued by the U.S. Fish and Wildlife Service.
- **Los Padres National Forest Volunteer, Santa Barbara District, Santa Barbara, Ca.** As a volunteer for the Los Padres National Forest, I assisted forest service employee, Leticia Gallardo, on her research of the threatened red-legged frog. The research aims to determine population density and distribution of red-legged frogs in the upper Santa Ynez River watershed. We used PIT tagging and radio tracking techniques to monitor the red-legged frog's dispersal from breeding ponds. This work was performed 2-4 weekends per month and involved night surveys for frogs, wading in creeks to catch and tag specimens, and recording vital data such as weight, length, and habitat preference.

## Chronology

- 06/2006-Present: URS CORPORATION, Santa Barbara, California
- 04/2005-06/2006: Opus Environmental Consultants, Palo Alto, California
- 02/2004 -03/2005: BioResource Consultants, San Bernadino, California
- 10/2003-12/2003: TRC Consultants, Montecito, California



- 6/2003-8/2003: Bioresource Consultants, Los Angeles, California
- 3/2003-5/2003: Kiva Biological Consulting, Mojave Desert
- 12/2002-3/2003: Bioresource Consultants, Oxnard, California
- 10/14/02-10/26/02: Bioresource Consultants, 29 Palms, California
- 3/2002-5/2002: Chambers Group, Mojave Desert
- 9/2000-10/2001: Chambers Group, Santa Barbara, California
- 11/1999-9/2000: Los Padres National Forest, Santa Barbara Ranger District, Santa Barbara, California
- 4/1999-11/1999: Los Padres National Forest, Santa Lucia Ranger District, Santa Maria, California
- 5/1998-5/1999: Los Padres National Forest, Santa Barbara District, Santa Barbara, California

### **Contact Information**

URS Corporation  
130 Robin Hill Road, Suite 100  
Santa Barbara, CA 93117  
Tel: 805.964.6010 ext. 568  
Fax: 805.964.0259  
[crissy\\_slaughter@urscorp.com](mailto:crissy_slaughter@urscorp.com)

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## Christine Stora

### *Environmental Scientist*

#### Overview

Ms. Stora is an Environmental Scientist with 5 years of experience in providing services for solar and wind energy projects, including program planning, project management support, asset development, extensive fieldwork and subcontractor coordination, health and safety coordination, and CEQA compliance and document preparation. Ms. Stora manages the Renewable Resource Group in the Sacramento Office. She is a URS Certified Project Manager and the Deputy Project Manager for the Solano Wind Project.

#### Areas of Expertise

- Wind Turbine Siting/Planning
- Environmental Monitoring and Compliance
- Field Investigation
- TAC Participation
- Planning

#### Years of Experience

With URS: 5 Years

With Other Firms: 0 Years

#### Education

BS/Environmental Science/  
2003/Humboldt State University

#### Registration/Certification

2007/URS Project Management  
Certification

40-Hour OSHA Hazardous Waste  
Site Worker Training

#### Solar and Wind Energy Development Projects

- ❖ SES Solar One through Six Solar Thermal Power Project, Barstow, CA, for Sterling Energy Systems
- ❖ Lassen Wind Project, Susanville, CA, for the Sacramento Municipal Utility District
- ❖ Gargau Wind Project, Rio de Janeiro, Brazil, for WestLB
- ❖ Granite Mountain Wind Project, San Bernardino, CA, for Granite Wind LLC
- ❖ Due Diligence for Airtricity Wind Assets, U.S. and Canada, for Global Infrastructure Partners
- ❖ Confidential Wind Project, Northern U.S., Confidential Client
- ❖ Solano Wind Project, Near Rio Vista, CA, for the Sacramento Municipal Utility District

#### Project Specific Experience

##### **Biological Services, SES Solar One through Six Solar Thermal Power Project, Barstow, CA, for Sterling Energy Systems:**

Ms. Stora conducted desert tortoise presence/absence surveys, identified vegetation and washes in the solar project sites, provided GPS support, and recorded occupied and active tortoise burrows at the Mojave Desert site.

**Lassen Wind Project, Susanville, CA, for SMUD:** Ms. Stora assisted in developing the technical approach for the preparation of the Right-of-Way (ROW) grant application and Plan of Development (POD) submitted to the Bureau of Land Management (BLM) for the 150- to 300-MW wind power project proposed for development on BLM land in northern California. The POD included the optimal initial project layout for wind turbine generators (WTGs), temporary land uses for the construction phase, permanent land uses for operations and maintenance (O&M), the power collection system, substations and transmission lines, and an O&M facility. The POD also included federal agency cost



recovery, potential issues and conflict areas, environmental and cultural resource studies, public interests and concerns, potential alternative site locations, and financial obligations to be assumed. The project is sited in a newly recognized Wind Resource Area (WRA) and is the focus of a new 50-kV electric power transmission line in northern California.

**Gargau Wind Project, Rio de Janeiro, Brazil, for WestLB:** Ms. Stora is assisting in engineering fatal flaw analysis for this project. Recommendations will be developed for use in confirming whether this project should be funded. Documents under review include contractual agreements, the power purchase agreement, supply documents, balance of plant documents, and others. Ms. Stora provides project management support, including budget and schedule management of the work directed

**Granite Mountain Wind Project, San Bernardino, CA, for Granite Wind LLC:** Ms. Stora is providing wind technology services and is part of the team providing NEPA/CEQA assistance for this project, which involves installing 27 WTGs on 72 acres of BLM-managed lands and preparing and EIS/EIR on behalf of the BLM and the County of San Bernardino.

**Due Diligence for Airtricity Wind Assets, U.S. and Canada, for Global Infrastructure Partners:** Ms. Stora provided project management assistance for an international technical team assessing the value and status of Airtricity's operations for possible purchase by a private investing firm. At the time of the acquisition, Airtricity was operating wind farms with around 210 MW of installed capacity; an additional 880 MW were planned for operation by the end of 2008. Wind farms already operational or under construction were situated in extremely favorable locations in Texas and New York and boasted superb load factors. More than 1,000 MW of additional Airtricity projects were in an advanced development stage. These projects would require an investment volume of around \$3.5 billion until 2011. Other Airtricity projects across the U.S. and Canada, totaling more than 5,000 MW, were in an early development stage.

**Wind Project, Northern U.S., Confidential Client:** Ms. Stora provided consulting service support to a confidential client regarding WTG foundation design and installation QA/QC for a large new wind project.

**Greenhouse Gas Emissions Study, Sacramento, CA, for SMUD:** SMUD hired URS to investigate ways to reduce carbon dioxide emissions associated with electric power generation by three natural gas-fired cogeneration facilities. Ms. Stora provided numerous project management assistance services for the project, including the development of Project Management Plans and subcontracts.

**SMUD Proposed Annexation, Sacramento, CA, for SMUD:** The annexation program consisted of a proposal by SMUD to amend its Sphere of Influence and to annex the cities of West Sacramento, Davis, Woodland and portions of unincorporated areas of Yolo County. As an



Assistant Planner, Ms. Stora assisted with research for, and the legal distribution of, the NOP, Draft EIR, and Final EIR for this controversial project.

**Solano Wind Project, Near Rio Vista, CA, for SMUD:** Ms. Stora has provided extensive project management assistance for the Solano Wind Project, including the development of Project Management Plans for several contracts and task order management that involved monitoring task order progress against existing budgets and creating detailed project schedules using Microsoft Project. Her project services for the District's project include the following.

- **Solano Wind Project Asset Management Plan:** Ms. Stora assists with the development of a living management plan for the overall Solano Wind Project (Phases 1, 2, and 3), including program accomplishments to date and program asset assessment (property, equipment), land management, avian management, and wetland and other sensitive habitats. The Asset Management Plan also covers CEQA planning and construction activities through the final build out of the project, projected for 2011.
- **Solano Wind Phase 3 Project:** Ms. Stora was a co-author of the NOP, with other URS planners, and managed its formal distribution. She has taken a lead on WTG siting issues, particularly radar issues associated with new WTG developments within the line of sight of various DOD and NOAA radar systems. She researched the impacts of the large WTGs in the WRA on U.S. Air Force radar, working with Solano County, the U.S. Air Force, the FAA, and the DOE to understand these issues and mitigate impacts to project operation.
- **Solano Wind Phase 3 Project EIR and Permitting:** Ms. Stora provided independent technical review of the Solano Wind Project Phase 3 EIR. She is also providing environmental permitting support services, including identifying permits needed for the construction and operation of the Phase 3 project, and assisting the District with agency and neighboring wind developer consultations associated with the Phase 3 EIR.
- **Solano Wind Phase 3 Project Notice of Preparation (NOP):** Ms. Stora was a co-author of the NOP, with other URS planners, and she coordinated the formal distribution to the State Clearing House, stakeholders, state, responsible trustee, local, and public agencies. She maintained a database to track the legal mailing, comments, and responses from agencies and the public.
- **Solano Wind Phase 2 Project Supplemental EIR and Final EIR:** As an Assistant Planner, Ms. Stora assisted URS planners in preparing and distributing the Final EIR. She prepared a legal filing of EIR-related documents and assisted with CEQA-related services.



- **Solano Wind Phase 2 Project EIR Monitoring and Compliance:** As the Lead Field Technician, Ms. Stora provided project management support, including budgeting, developing Project Management Plans, reviewing invoices, and coordinating subcontractors. Ms. Stora was the lead field investigator for a team assessing burrowing owl habitat and performing focused surveys at the Phase 2 site (approximately 3,000 acres). She coordinated ongoing site investigations for environmental compliance, including avian and wetland construction compliance monitoring.
- **Solano Wind Phase 1 Project, Avian Mortality Study:** As the Lead Field Technician, Ms. Stora assisted in developing and researching the avian monitoring protocol and WTG search patterns. She prepared the Project Management Plan and Health and Safety Plan, coordinated field training of the search crew and avian experts, and was responsible for coordinating with the search crew, enXco personnel, and land tenants.
- **Solano Wind Phases 1 and 2 Project Agricultural Lease and RFP:** Ms. Stora provided project management support for the agricultural lease of approximately 3,500 acres of District-owned property and for the preparation of the request for proposal for bidders. Ms. Stora conducted a site inventory (buildings, fences, roads, wells, utilities, etc.) for this effort and coordinated document review, production, schedule, and progress update meetings for the URS Program Manager.
- **Solano Wind Phase 2 Project EPC Contract Support:** Ms. Stora coordinated contract changes and provided document controls during negotiations for the District's Engineer Procure and Construct (EPC) Contract. She tracked the euro/U.S. dollar exchange rate for over a year and provided an economic analysis for the WTG components to be purchased in euros as part of the contract. This provided valuable information regarding the timing of contract execution.

***Xeric Specialties Consulting*     Dave Silverman - Plant Ecologist**  
**437 Calle De Collie, Ridgecrest, CA 93555, (760) 384-8535 , xeric@mchsi.com or xsl@iwvisp.com**

**Qualifications:**

Services in botanical and biological assessments, mapping, research and reporting. Experienced in field identification, keying-out and determining plant taxa of the southwest region, including California, Nevada and Arizona.; able to on-site field ID 10,000+ regional plant taxa. Over 8 million acres of vegetation communities GIS-mapped (aerial-digitized and GPS data) in the southwest U.S. Experienced at working under permits, biological opinions, MOUs, etc. Consultant and contributor on rare plant taxa to CNPS rare plant program since 1996. Worked on desert tortoise population trend studies and mitigation projects in AZ, CA, NV and UT, between 1990 and 2000 mostly, including permits, and 500+ tortoises processed for field data, during 800+ field days. Active attendance of scientific symposiums and workshops, wildlife conservation meetings and numerous Jepson Herbarium-sponsored workshops concerning plant family. Familiar with southwest geography, geology and mineral types, terminology, experienced at visually identifying common and characteristic crystal-mineral-rock components in soils and strata. Experienced at interpreting maps, writing physiognomic and vegetation descriptions. Accurate and reliable in collecting detailed data from transects, grids and other sampling methods. Skilled computer user and data handler (ten years of professional experience), with additional experience in biology-related applications. Proficient at collecting field data with maps and differentially corrected GPS or using aerial photos, rendering to graphics in CAD and GIS, and conversion to other file formats. Equipped with all necessary software and hardware for sub-meter GPS and front-end GIS work. Avid hiker, traveler and photographer of the desert since 1978. All equipment necessary to conduct extended field work, under adverse conditions and cross-country travel, including 4WD vehicles. Excellent field skills. EMT qualified field member of the China Lake Mountain Rescue Group from 1985-1992. Liability Insurance through Hartford Casualty Insurance Co.

**Recent Experience:**

April, 1998 to Present. Botanical/ Consultant. Various projects, primarily botanical and TnE fauna field surveys, writing/reporting, vegetation mapping, and GPS data collection/GIS development. Recent clients include :

Aspen Environmental Group, Agoura Hills and San Francisco, CA (Chris Huntley, 818-597-3407)  
URS Corp. Oakland, Fresno, San Diego (Patrick Mock (619) 294-9400), Santa Barbara, and Las Vegas offices.  
Tetra Tech EM Inc. San Francisco (Cindi Rose, 415-222-8286)  
Las Vegas Valley Water District (Seth Shanahan, 702-822-3314)  
Phoenix Biological Consulting, Wrightwood, CA (Ryan Young 661-261 3390)  
Natural Resource Consultants (Dave Levine, 949-497-0931)  
Southwest Botanical Research, Chino Valley, AZ (Marc Baker, 928-636-0252)  
Kleinfelder and Associates (Chris Enyedy, 559-486-0750)  
Resource Design Technology, Eldorado Hills, CA (Dave Brown, 916-983-9193)  
Wildland International, Las Vegas, NV (Dan Maleug, 702-657-9711)  
ESR Corp., Oakhurst, CA (Scott Larson, 559-683-5335)

Recent Projects (2004-present:)

9/07; Aspen Environmental Group. Floral/vegetation survey for City of Banning, Riverside Co., Liberty Biomass project . Sensitive species surveyed for included; *Dudleya multicaulis*, *Allium marvinii*, *Astragalus pachypus*, *Centromadia pungens*, *Chorizanthe xanti* var. *leucotheca*, *C. parryi* var. *parryi*, and *Abronia villosa* var. *aurita*.

8/07; Wetlands Training Institute. Completed 40-hour basic wetlands delineation course in San Diego, CA, taught by C. Newling, and J. Teaford, including Arid West supplement and forms. Course based on 1987 Wetland Delineation Manual used by the Army Corps of Engineers, Course included technical guidelines for wetland delineations, field indicators of hydrophytic vegetation, hydric soils, and wetland hydrology, methods for making jurisdictional determinations, methods to apply in disturbed areas, recognition of problem wetlands and recent determinations regarding Arid West region, Rapanos (2006) and SWANCC (2001) decisions.

5/07 to 11/07; Aspen Environmental Group. Botanical and wildlife surveys for Angeles National Forest, for BE/BA review of various management release sites, plantations, and fuel stands. FS sensitive species surveyed included *Castilleja gleasonii*, *Huechera elegans*, *Arctostaphylos gabrielensis*, *Hulsea vestita* ssp. *gabrielensis* and *Swertia neglecta*.

5/07; Phoenix Environmental Consulting. Floral/rare plant survey for proposed water line between facilities at Baldwin Lake, San Bernadino Co.. Status species surveyed for included *Sidalcea pedata*, *Castilleja cinerea*, *Symphyotrichum defoliatum*, *Ivesia argyrocoma*, *Mimulus exiguus*, *Linanthus killipii* and *Thelypodium stenopetalum*.

5/07; Southern Nevada Water Authority - Las Vegas Wash Coordination Committee. Vegetation types, descriptions and species occurrence matrix for National Vegetation Classification Standard type associations and alliances for Las Vegas Wash Project area.

5/07; URS Corp. Santa Barbara Office. Biota/habitat surveys for proposed Oc5/06; URS Corp. Santa Barbara Office. Biota/habitat surveys for proposed Ocotillo power plant site and associated gas line route alternatives, in Palm Springs, California. Duties/deliverables include protocol-level field surveys for Coachella Valley fringe-toed lizard (*Uma inornata*), desert tortoise (*Gopherus agassizii*) and flat-tailed horned lizard (*Phrynosoma mcallii*) for proposed plant site and routes, vegetation and faunal species observations, photos, GPS/GIS data and report

4/07; Natural Resource Consultants. Vegetation sampling surveys for Centennial LLC at Tejon Ranch, Kern and Los Angeles counties. Duties/deliverables include point-intercept and daubenmire types data collection of grassland species plots.

3/07 to 4/07; URS Corp. San Diego Office. Biota/habitat surveys for proposed Solar One power plant site and associated power line corridor from Hesperia to Pisgah, California. Duties/deliverables include field survey of routes, list of floral and faunal species observations, streambed delineations, photos, GPS/GIS data and vegetation maps. Status species for non-protocol surveys included Mohave ground squirrel (*Spermophilus mohavensis*), desert tortoise (*Gopherus agassizii*), short-jointed beavertail cactus (*Opuntia basilaris* var. *brachyclada*) and white-margined penstemon (*Penstemon albomarginatus*).

10/06; Tom Volk and Associates, research and writing of biological opinions for sensitive biota in the Tehachapi area of south-central CA, for EIR process for WZI Materials sand and gravel mine.

4/06 to 8/06; URS Corp. Las Vegas Office, NV. Botanical/rare plant surveys for Toquap Wash Energy and Coyote Springs project

4/06 to 5/06; Tetra Tech EM Inc. Biological surveys for hazardous site assessment at China Lake Naval Air Warfare Station.

3/06. Kleinfelder and Associates. Desert tortoise and general biota survey for Terminal Project, Boron, Kern Co. CA.

9/05 to 3/06; Aspen Environmental Group. Mapped GIS inventory tree survey in Griffith Park for mitigation measures required for DWP proposed water line, Los Angeles, CA.

10/05 to 12/05; Resource Design Technology. Botanical Surveys and consulting services for revegetation/reclamation plan for F.W. Aggregates mine, southeast of Lone Pine, CA.

12/04 to 5/05; Southern Nevada Water Authority - Las Vegas Wash Coordination Committee. Field ground-truth vegetation mapping project utilizing national NRCS vegetation mapping protocol methods.

5/04 to 10/05; Aspen Environmental Group. Botanical and wildlife surveys for Angeles National Forest, for various management release sites, plantations, fuel stands, etc. Sensitive plant species surveyed for included *Swertia neglecta*, *Calochortus plummerae*, *C. palmeri*, *Castilleja gleasonii*, *Linanthus concinnus*, *Perideridia pringlei*, *Galium jepsonii*, *Lupinus excubitus johnstonii*, *Nemacladus gracilis*, and *Arenaria macradenia* var. *kuschei*.

4/04 to 4/05; URS Corp – San Diego. Botanical and habitat surveys for initial phase of HCP planning for MWD Colorado River Aqueduct and associated properties in Riverside and SE San Bernadino Co. Sensitive plant species surveyed for included *Ditaxis californica*, *D. clariana*, *Teucrium glandulosum*, *Cryptantha costata*, *C. holoptera*, and *Linanthus maculata*.

05/03 to 3/06; Aspen Environmental. Botanical surveys for various project sites along DWR California Aqueduct in Los Angeles, San Bernadino and Kern Co.s. Sensitive plant species surveyed for included *Erodium macrophyllum*, *Berberis nevini*, *Chorizanthe parryi*, *Scutellaria bolanderi austromontana*, and *Calochortus clavatus*. Some work conducted on USFS lands in the Castaic Creek region. Other work conducted on Tejon Ranch (Kern Co.) and Los Flores ranch (San Bernadino Co.)

6/02 to present; Southern Nevada Water Authority - Las Vegas Wash Coordination Committee. Vegetation and floral assessment, quantitative sampling design, collections and voucher preparation, restoration consulting, revegetation monitoring and worker education for Las Vegas Wash riparian habitats in flood control and water quality project areas.

04/01 to present; Ongoing herbarium study (RSA, SBBG, CAS, UNLV and UC Jeps) and research of annual cryptantha taxonomy.

1996 to present; China Lake Naval Weapons Center and Edwards Air Force Base. Ongoing volunteer or funded studies on floristic diversity, plant communities, springs, western Mojave seasonal pool and playa biota. Sensitive plant species surveyed for included *Astragalus jaegerianus*, *Astragalus mojavenensis hemigyris*, *A. atratus mensanus*, *A. lentiginosus micans*, *A. oophorus*, *Calochortus panamintensis*, *C. striatus*, *Cryptantha clokeyi*, *Goodmania luteola*, *Loeflingia squarrosa artemisiarum*, *Eriastrum hooveri*, *Astragalus lentiginosus* var. *albifolius*, *A. preussii laxiflorus*, *Cymopterus deserticola*, *Psoralea arborescens* var. *arborescens*, *Chorizanthe spinosa*, *Eriophyllum mohavense*, *Mentzelia tridentata*, *Linanthus arenicola*, *Sclerocactus polyancistrus*, *Phacelia nashiana*, *P. monoensis*, *P. mustelina*, *Eriogonum mensicola*, and *Arabis dispar*.

3/05 to 11/05; URS Corp.-Las Vegas. Botanical/cactus surveys for FAA proposed Mesquite Airport on 2600 acre BLM takedown parcel in eastern Clark Co., NV. Sensitive plant species surveyed for included *Astragalus geyeri triquetrus*, *A. preussii laxiflorus*, *A. lentiginosus stramineus*, *Cirsium virginense*, *Eriogonum viscidulum* and *Pediomelum castoreum*.

5/05 to 10/05; URS Corp.– San Diego. Botanical surveys for proposed Southern California Edison Oak Valley transmission line project in Western Riverside Co (Beaumont-Banning area), California. Sensitive plant species surveyed for included *Berberis nevini*, *Dodecahema leptoceras*, *Eriastrum densifolium* var. *sanctorum*, *Centromadia pungens* and *Calochortus plummerae*.

04/03 to 7/05; Twining/ESR Corp.s Botanical/rare plant surveys for Granite/Desert Aggregate Five Bridges mining expansion project EIR, Bishop. Sensitive plant species surveyed for included *Calochortus excavatus*, *Spartina gracilis*, *Chrysothamnus albidus*, *Oryctes nevadensis* and *Mentzelia torreyi*.

5/05; SNWA-Jones and Stokes Association – Botanical survey for proposed water pipeline in Las Vegas, Hidden and Coyote Springs Valleys (I-93 corridor) survey. Sensitive plant species surveyed for included *Astragalus geyeri triquetrus*, *A. preussii laxiflorus*, *Penstemon bicolor*, *Enceliopsis argophylla*, *Arctomecon californica*, *Gilia nyensis*, *Phacelia filiae*, *Arenaria stenomeres*, *Anulocaulis leiosolenus*, and *Eriogonum corymbosum nilesii*.

05/05; Phoenix Biological Consulting. Botanical/rare plant survey for proposed Service Rock sand and gravel mine near Garlock, E. Kern Co., CA. Sensitive plant species included *Mentzelia eremophila*, *Eschscholzia twisselmannii* and *Sclerocactus polyancistrus*.

04/05; Attended Nevada Native Plant Society rare plant workshop in Las Vegas , NV.

04/05; Wildland International. Botanical/desert tortoise survey for proposed SNWA surface water pipeline, NE of Las Vegas.

6/04 to 7/04; URS Corp. Botanical surveys for Mammoth/Bishop Airport expansion, Inyo/Mono Co.s.

5/04; Assistant instructor for Kern Co. Flora workshop sponsored by The Jepson Herbarium.

02/04; Attended two Jepson Herbarium workshops at UC Cal Berkeley; on molecular phylogeny (J. McMurray), and on new species description and publication (B. Erter).

## Other Experience:

April, 1996 to April, 1998. Senior Systems Engineer. Applied Technology Associates, Boeing Corp and Tetra Tech, Inc.. Working for Naval Air Weapons Station (NAWS) Land Use Planning Office (John O'Gara, 760-927-1524), China Lake, CA. Work includes botanical surveys, data processing, and GIS rendering of NAWS vegetation, maintaining and updating flora database, writing vegetation descriptions for NAWS EIS, NRMP and minor EIRs, and delineating of plant communities and sensitive plant populations. Duties also include maintaining and integrating GPS equipment and survey technology and producing various natural resource layers for GIS system. During this time, completed and delivered on 1.5 year GPS measured-GIS mapping project (as primary mapper, editor and project manager) of all major anthropogenic features of the 1,000,000+ acres of NAWS range areas, including all historic disturbances, roads, and test areas, rendered to true 2-D polygons, with elevational raw data, at sub-meter accuracy; the only such project of this scale in the U.S. during 1997/98. Products included CA Gap analysis GIS map layers of plant communities of NAWS lands from NAAP aerial photos and ground-truthed floristic surveys using relevés and collections. Other duties during this time included acting as liaison to Mojave Ecosystem Project meetings, field surveys of various sensitive resource features located on NAWS lands, input, editing, attribution of 2D image data, reduction to GIS import formats, minor GIS analysis and layouts, metadata creation and resource documentation, and assistance with other projects including hyper-spectral vegetation imagery demonstration, endangered Mohave tui chub resource surveys, and review of existing related documents of past and present vegetation resources (plant list for the region, plant taxa database, management plan vegetation descriptions, sensitive plant maps and database data). Expanded by voucher, the known flora in the region by 150% during this time.

March, 1991 to August, 1996. Field Researcher/ Biological Consultant. Primarily for Kiva Biological Consulting and Enviro-Plus Consulting, also including Jones and Stokes Associates, Eremico consulting Great Basin Exploration and Mining Co., Inc., Reno, NV and The Planning Center, Bakersfield, CA. Desert tortoise field and lab work (similar to most recent tortoise work descriptions), mostly as a primary field investigator on 60-day study plots (12 sites in CA, NV and AZ). Duties included preparation of carcasses and photographs, data transfer to computer formats, analysis and report writing and assistance with associated botanical work. Lab duties included preparation of carcasses and photographs, data transfer to computer formats, analysis and report writing. Principal field researcher and team leader in Nevada Department of Wildlife desert tortoise studies at three sites (Piute Valley, Christmas Tree Pass and Eldorado Valley) in Clark County. Three different survey types were performed at these sites including standard 60-day methods, one square kilometer and random hectare sampling. Duties include assisting proposal writing and personnel recruitment, searches for, capture, and processing of tortoises, field notes, coordination/quality control of three four-person crews. Work during this time also included presence or absence surveys (five sites), environmental monitoring (areas in CA and NV), assistance with plant surveys and sheep grazing study, endangered species preconstruction surveys in the San Joaquin Valley for pipeline construction (target species were San Joaquin kit fox and blunt-nosed leopard lizard), additional tortoise surveys (including plant list) at George AFB, CA., and performed environmental monitoring during exploratory drilling in East Imperial County, CA (impact analysis/written report to the BLM). Botanical work during this time included projects with Southwestern Botanical Research and Kiva Biological Consulting for perennial cover transects (100m line intercept transects and Daubenmire grids) for Arizona BLM Study Plot in the Hualapai Mountains, Mohave Co. AZ. Vegetation surveys of parcels in Antelope Valley, Frazier Park.

April, 1990 to November, 1990. Biological Aide/Forestry Technician. USDA Forest Service (Theresa Ritter-Cannell Meadow District), Sequoia National Forest, CA. Conducted spotted owl (*Strix occidentalis*) surveys per USFS protocol for two timber sale areas. Also worked as Forestry Technician for two months. Duties included use of chainsaw for thinning as part of post-harvest treatment. Also worked as a mapper and driver for US Department of Commerce 1990 census.

September, 1980 to May, 1989. Computer Specialist (334-GS-9). US Navy, NAWS, China Lake, CA. Systems Manager for central computer facility. Specialized in VAX/VMS system software and third-party products. Also worked with Univac, MS-Dos, Mac and Unix systems (Cray +Alliant front-end) which were integrated at main site. Duties included keeping systems operational, maintaining integrity of software and data, consulting and managing a large (500+) user group, creating data transfer routines and programs to bridge vendor/site gaps, customizing and installing new software, managing environmental requirements, site security, hardware configuration, creating hardware and software communication links, and documenting local software procedures. Completed software training to VAX/VMS system programmer level.

## Education:

24 units, biology major, Mesa College, San Diego.

10 units, computer science major, City College, San Diego

## References:

Chris Enyedy, Kleinfelder and Associates, Fresno, CA (559) 486-0750

Seth Shanahan - Las Vegas Valley Water District (702) 822-3314

Jim Rocks – Private Consultant, San Diego, CA. (619) 843-6640

Marc Baker – Southwest Botanical Research, Chino Valley, AZ (928) 636-0252

Tom Campbell – NAWS Environmental Project Office, China Lake, CA (760) 939-3222



## Past Professional Project Experience (1998-2003):

06/03 to 11/03; Kern Co. Planning Dept. Biota survey of two parcels in Boron, Ca., and one site in Frazier Park, CA.

06/03 to 8/03; Caltrans-Robert Frank Construction, Inc.. Pre-construction survey, monitoring and report for desert tortoise and Mojave ground squirrel per biological opinion.

04/03 to 5/03; URS Corp. Botanical surveys for two sites in western Riverside Co., and one in Escondido, San Diego Co.

04/03; Attended two Jepson Herbarium workshops; on ferns (A. Smith), and on desert lichens/soil crusts (St. Clair).

01/03 to 4/03; Sanford Stone mine. Desert tortoise fence construction monitoring, clearance surveys and worker education in the BLM Rand ACEC, Red Mountain, CA. Sensitive plant species included *Mentzelia eremophila*, *Eschsholzia twissellmannii* and *Cryptantha clokeyi*.

3/02 to 9/03; URS Corp. Rare plant and blunt-nosed leopard lizard surveys for Caltrans SR119 highway widening project between Bakersfield and Taft, including Elk Hills. Sensitive plant species included *Atriplex coronata*, *A. vallicola*, *A. tularensis*, *Eriastrum hooveri*, *Caulanthus californicus*, *Delphinium gypsophilum* and *Stylocine citroleum*.

03/03 to 06/03; Jones and Stokes Associates. General vegetation sampling for species richness, cover, density and rare plant surveys for Edwards AFB.

12/02 to 02/03; Ecology & Environment, Inc. Desert tortoise pre-construction clearance surveys and construction monitoring for Kern River Gas Transmission pipeline project along Highway 58, Barstow to Mojave, CA.

10/14 to 10/03; BioResource Consultants. Desert tortoise surveys (USFWS protocol) on 29 Palms Marine Core Base, CA.

9/01 to 2003; Cal St. Dominguez Hills Foundation (Dr. David Morafka). Ongoing pitfall trapping project for Panamint Alligator Lizard (*Elgaria panamintina*) in the northern Mojave Desert. Duties include installing and monitoring traps on NAWS CL (Coso and Argus Mountains) and processing faunal collections for data. Project suspended, but trap maintenance and construction continuing for my trapping sites at NAWS.

6/02 to 9/02; Eve Laeger Consulting. assist with floristic survey of Manter Burn, sampling of various sites, in east Canell Meadow District, USFS S. Sierra NV, CA.

7/02 to 8/02; Baseline vegetation sampling of riparian monitoring transects for Garcia & Assoc./LA DWP project located in the lower Owens River region, CA..

6/02; URS corp. Desert tortoise surveys in Area 62 of Nevada Test Range, for Nellis AFB.

5/02; Impact Sciences Corp. Rare plant survey, GPS site mapping on Tejon Ranch, E. Tehachapi Mtns. Species of concern include *Erodium macrophyllum*, *Delphinium parryi* ssp. *purpureum*, *Thermopsis macrophylla*, *Navarettia setiloba* and *Eriophyllum lanatum howellii*.

3/02 to 4/02; Enviro-Plus Consulting/URS corp. Various pre-construction surveys (plants, tortoise, burrowing owl) and monitoring for Williams High Desert Power Plant Project along highway 395 and Victorville.

2/23/02; attended mosses (Norris) and lichens (Bratt) Jepson Herbarium workshop. Also attended perennial Lupine workshop (Scholars) in July of 2002.

6/01 to 11/01; U.S Navy (Naval Air Weapons Station China Lake (NAWS CL)) Environmental Project Office task to inventory, map and report on three alkaline spring areas in the Coso Mountains

4/20/01 to 11/15/01; Jones and Stokes Associates. BLM GSA contract for rare plant surveys for Clokey's cryptantha (*Cryptantha clokeyi*), and other rare plants including Lane mountain milk-vetch (*Astragalus jaegerianus*), Desert cymopterus (*Cymopterus deserticola*), and Alkali mariposa lily (*Calochortus striatus*), associated with the Ft. Irwin expansion area and BLM West Mojave Plan, BLM Contract task order under Jones and Stokes.

7/01 to 11/4/01; attended Carex (Norris) and Polygonaceae (Reveal) Jepson Herbarium workshops and SERCAL conference.

7/15/01; Rare plant surveys for proposed gold mine (American Reward Mill) in Mazourka Canyon of Inyo county. Sensitive plant species include *Astragalus inyoensis*, *Arabis dispar*, *Allium atrorubens* and potentially new taxa of *Eriogonum umbellatum*.

5/25/01; McCormick Biological. Rare plant survey for National Cement plant (McCormick Biological), in S. Kern county. Species of concern include Yellow false lupine (*Thermopsis macrophylla*) and Mt. Pinos larkspur (*Delphinium parryi* ssp. *purpureum*).

4/18/01; rare plant surveys for Three-corner milk-vetch (*Astragalus geyeri* var. *triquetous*), Bicolored penstemon and other potential rare plants on PG&E powerline project in Meadow Valley area, NV., for URS Corp.

3/01 to 7/6/01; rare and narrow endemic plant search, including Quino Checkerspot habitat assessment, on approx. 3,000 acres of Otay Ranch lands, San Diego Co., for URS Corp.

5/12/01; rare plant survey for proposed powerline near Victorville, San Bernadino Co., for Varanus Biological Services. Target species included Alkali mariposa lily, *Pediomelum castoreum*, *Cymopterus deserticola*, *Camissonia boothii* ssp. *boothii* and other TnE pls.

4/00 to present; botanical assessment of the Lost Valley area of northeast San Diego County, property of Orange Co. council of BSA, ca. 800 acres, for Varanus Biological Services, Inc. San Diego, CA. Project associated with EIR requested by San Diego County. ca. 40 hours of work. TnE spp incl *Astragalus oocarpus*, *Lessingia glandulosa* var. *tomentosa*, *Chaenactis parishii*, *Linanthus orcuttii*, *Gilia caruifolia*, *Rupertia rigida*, *Lilium humboldtii* and *Horkelia clevelandii*.

10/00 to 12/00; biological monitor under USFWS permit for fiber line project (Williams), from Yuma, AZ to Riverside, CA. Duties included pre-construction surveys, monitoring construction and reclamation per protocol and BO. Target species included Flat-tailed Horned Lizard (*Phrynosoma M'callii*), Coachella Valley Fringe-toed Lizard (*Uma inornata*), Desert Tortoise, Various endangered milk-vetches (*Astragalus magdalenae* var. *peirsonii*, *A. tricarinatus*, *A. crotalariae* and *A. lentiginosus* var. *coacellae*) and other sensitive plant and animal spp.

6/00 to 12/00; rare plant surveys and meetings with USFWS concerning federally endangered Otay tarplant (*Hemizonia conjugens*) for URS Corp., on the U.S. Generating Company proposed Otay Mesa generating plant project.

10/99 to 12/00; mine reclamation/revegetation plan including botanical assessment, vegetation performance standard and small mining plan (SMARA) for proposed aggregate mine in Frazier Park, Kern Co., for Ojai Concrete, Inc. ca. 200 hours of work. Sensitive plant species were *Castilleja plagiotoma* and *Quercus lobata*.

5/99 to 6/01; botanical assessment of parcel in Lockwood Valley, Ventura Co., for Kiva Biological Consulting/French and Associates. TnE species include Mt. Pinos onion (*Allium howellii* var. *clokeyi*) and *Gila leptantha* ssp. *pinetorum*.

7/00; habitat assessment related to FE Quino Checkerspot Butterfly, for URS Woodward-Clyde - San Diego, project related to permit for generating plant on Otay Mesa in San Diego County.

7/00; habitat assessment related to FE Willow Flycatcher, for Varanus Biological Services and USFWS contract, project related study area along San Luis Rey River in San Diego County.

7/00; plant communities assessment for FE California Gnatcatcher study on U.S. Navy Ordnance facility in Fallbrook, in San Diego County, for Varanus Biological Services (Navy contract).

4/00 to 6/02; rare and endangered plant surveys, for Impact Sciences, Inc., BioResource Inc., and McCormick Biological, in Kern and L.A. counties, CA., on areas proposed for development or mitigation by Tejon Ranch Company and Newhall Ranch Land Company. Project incl. searches especially for *Chorizanthe parryi* ssp. *fernandina* (Newhall), *Navaretia setiloba*, *Eriophyllum lanatum hallii*, *Thermopsis*, *Eodium macrophyllum*, *Opuntia basilaris treleasei*, *O. b. brachyclada*, *Escholtzii lemmonii* var. *kernensis*, and other TnE spp., combined areas of 35,000 acres. ca. 300 hours of work.

4/00; rare and endangered plant surveys with San Diego Natural History Museum (J. Rebman), San Diego, CA., with U.S. Marine Corps contract for rare and endangered plant surveys project on 7300 acres at Miramar MCAS. ca. 30 hours work. Target spp. incl. *Dudleya variegata*, *Arctostaphylos glandulosa* ssp. *crassifolia*, *Baccharis vanessae*, *Acanthomintha ilicifolia*, *Ambrosia pumila*, *Fremontodendron mexicanum*, *Chorizanthe orcuttiana*, *Monardella linoides* var. *viminea*, and *Ferocactus viridescens*.

2/00; rare plant habitat and soils assessment, and produced report for URS Woodward Clyde, San Diego, CA., concerning federally endangered Otay tarplant (*Hemizonia conjugens*) for U.S. Generating Company proposed Otay Mesa generating plant. ca. 100 hours work.

12/99 to 01/00; Assist Southwest Botanical Research, Chino Valley, AZ with Bureau of Reclamation contract for plant community mapping project on 1.4 million acres in central AZ. ca. 120 hrs.

11/99; botanical assessment of San Diego County Sweetwater River mitigation and revegetation area, 26 acres, for Varanus Biological Services, Inc. San Diego, CA. ca. 20 hrs.

11/99; plant cover sampling (pin frame) on Saltgrass plots at Owens Dry Lake, Inyo Co., CA. For Agrarian Research Inc. ca. 20 hours.

11/99; surveys (monitoring, video scoping of burrows, transects for USFWS protocol) for desert tortoise for Jones & Stokes Associates at various localities in the Mojave Desert. ca. 50 hours of work.

10/99: Participated in botanical collecting trip to Sierra De Guadalupe region of Baja Sur Mex., in association with Botany Dept. of San Diego Natural History Museum.

4/99 to 10/99: rare plant and general vegetation surveys, provided reports, maps, text data for URS Corp./Varanus Biological Services on Otay Mesa Generating Project and Sloane Canyon Sand and Gravel Projects. ca. 120 hours of work. Target Spp. incl. *Quercus dumosa*, *Cupressus forbesii*, *Rosa*, *Ambrosia pumila*, *A. chenopodifolia*, *Hemizonia conjugens*, *Dudleya variegata*, *Acanthomintha*, *Pogogyne nudiscula*, *Eryngium aristulatum* ssp. *parishii*, *Achnatherum diegensis*, *Lepechinia ganderi*, *Opuntia parryi* var. *serpentina*, *Bergerocactus emoryi*, *Brodiaea* spp., *Muilla clevelandii*, *Artemisia palmeri*, *Juglans californica*, *Astragalus deaneii*, and other TnE plant spp.

7/97 to 9/99: Contributed vegetation section of NAWS China Lake Integrated Natural Resources Plan (INRMP) and most data for vegetation section of NAWS EIS. Last contributions as of September 1999, include GIS mapped data for all sensitive and potentially sensitive plants coverages of sites, populations and potential habitats based on known data, habitat types, and surficial geologic units. GIS data covers 1,000,000+ acres in the region. Combination of volunteer services (through research agreement with NAWS) Tetra Tech. and DSI contracts. ca. 200 hours of work.

5/99 to 9/99: Participated as rare plant expert in four CNPS rare plant advisory committee meetings for Eastern Sierra Rare Plant Working Group, Peninsular Range-East Mojave-Colorado Desert Group, LA Co.-San Bernadino Co.-Ventura Co. Group and San Diego Co.-Riverside Co. Group. Regular contributor to rare plant E-Mail queries from CNDDb/CNPS (D. Tibor, R. Bittman).

4/99 to 9/99: rare plant and general vegetation surveys, provided reports, for Varanus Biological Services on San Diego Co. dept. of Public Works Monte Vista Borrow Pit project, and for MCAS Miramar herpetological trapping arrays site vegetation and physiognomic descriptions. Projects total ca. 80 hours of work. Sensitive spp incl. California Gnatcatcher, Red Diamond Rattlesnake, Orange-throated Whiptail, and Quino Checkerspot host plants (*Plantago*, *Castilleja*, *Lasthenia*).

3/97 to 7/99: field surveys (ca. 100 total hours) for NAWS China Lake for federally-listed Lane Mtn Milk-vetch (*Astragalus jaegerianus*), surveys conducted over three spring seasons, incl. 1999, for contracts with Digital Systems International, Tetra Tech and Applied Technology Associates.

5/99: Assisted BLM (West Mojave plan) and USFWS (C. Rutherford-Ventura office) with data, GIS templates, field surveys concerning federally listed and rare plants (*Astragalus jaegerianus* and *Cryptantha clokeyi*) affecting the proposed Ft. Irwin expansion. Volunteer-cooperative land planning project.

2/99: Reviewed and studied specimens of all plant taxa known to occur in San Diego County from San Diego Natural History Museum's synoptic collection in preparation for consulting work in the San Diego area.

6/98 to 8/98: Mojave Ground Squirrel habitat characterization surveys for West Mojave Plan (2 days of vegetation/habitat surveys). Also performed ca. 225 hours of tortoise density transect surveys for West Mojave Plan.

6/98: vegetation surveys, provided report for sites near Needles (City of Needles proposed prison site) for Kiva Biological Consulting. ca. 20 hours work. Target spp. incl. *Echinocereus engelmanni* var. *howei*, *Coryphantha vivipara* var.s and *Machaeranthera spinulosa* ssp. *goodingii*.

5/98: vegetation and rare plant survey for Western Botanical Services, for High Desert Pipeline project, Kramer Jct to Victorville/Adelanto. TnE target spp. incl. *Chorizanthe spinosa*, *Eriophyllum mohavense*, *Cymopterus deserticola*, *Pediomelum castoreum*, *Psoralea arborescens* var. *arborescens*, ca. 70 hours work

September, 1995. Botanist. Mark Bagley-Consulting Biologist (619-873-5326), Bishop, CA. Assisted with alkaline riparian vegetation sampling at Owens Lake, CA. Contract to establish baseline measurements with control sites and future monitoring of sites to determine vegetation impacts from ground water pumping associated with soda ash mining.

April to June, 1995. Botanist. Kiva Biological Consulting. Worked 30 field days on California Bureau of Land Management fire and alien grass study in the western Mojave desert. Contract associated with U.C. Riverside research being conducted by Matt Brooks. Duties involved identifying and sampling annual and herbaceous perennial plant composition along transects with evenly distributed grid samples in open and shrub-shaded sites. Diversity, biomass, and frequency data were collected. Worked at 32 sites in the Ord-Rodman, Superior-Cronese, and Fremont-Kramer resource areas.

June to July, 1993. Field Research Assistant. Donna J. Howell, Tucson, AZ. Assisted with study of long-nosed bats (*Leptonycteris curasoae*) in association with Luke Air Force Base near Organ Pipe Cactus Monument, Arizona. Duties included hiking to foraging locations and then tracking bats using radio telemetry and chemo-luminescent marking.

January to February, 1994. Biological Consultant. Kiva Biological Consulting. Performed preconstruction surveys and environmental monitoring for Southern California Gas pipeline in the Chuckawalla Bench/Chocolate Mountains region (Riverside Co.). Duties included searches for desert tortoise, vegetation sampling plots, desert tree surveys, tree trimming and construction monitoring for compliance.



## Denise Tu, EIT

*Water Resource Engineer*

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### Overview

Ms. Tu currently serves as a Water Resources Engineer in the Water Resources Department of URS Corporation's Sacramento, California office. She recently graduated from U.C. Davis, with a B.S. degree in Biological Systems Engineering, and an emphasis on ecological systems.

### Project Specific Experience

#### URS Projects

**San Joaquin Area Flood Control Urban Levee Geotechnical Evaluation Program, California Department of Water Resources, Stockton, CA, T&M, 2008, \$5,000,000:** Performed Kozeny-Carman hydraulic conductivity analysis, soil lab classifications, and contributed to slope stability analysis for San Joaquin Area Flood Control urban levee geotechnical evaluation program.

**SES Solar One-Six Solar-thermal power project, Sterling Energy Systems, Barstow, CA, 2008CA, 2008, \$1,500,000:** Performed desert tortoise surveys, identified local vegetation and washes, and tortoise habitat within solar project sites. Hiked transect lines and GPS support for surveys located in the Mojave Desert.

#### Water Resource Engineering

**Senior Design Group Member, Integrated Grey Water Filtration System, Senior Design Project, UC Davis, CA, Type of Contract, 2006-2007, Cost:** Ms. Tu designed and constructed an integrated grey water filtration system incorporating an anaerobic digester, trickling filter and algae unit. Calculations and construction were based on desired retention time, nutrient loading, recirculation, and height parameters. Effectiveness was measured by nutrient reduction from input to output of each unit.

**Student Researcher, Engineered Logjam Project, Dept. of Land, Air and Water Resources, UC Davis, CA, Type of Contract, 2007-2008, Cost:** Ms. Tu designed parameters, using hydrologic equations, for a logjam on the Mokelumne River in California, which is anticipated to increase spawning and juvenile rearing habitat and to reduce bank erosion. Analysis was based on various constraints, including rolling, friction, flow rates, stability, and buoyancy. Logjam structure was built in August 2007.

#### Watershed Management

**Student Researcher, Yuba River Restoration Research, Center for Watershed Sciences, UC Davis, Type of Contract, CA, 2006, Cost:** Ms. Tu conducted fieldwork for long term research on salmon spawning on the Yuba River. She performed pebble counts and data analysis to

### Areas of Expertise

- Ecologically Based Waste Water Treatment Systems
- Stream Restoration

### Years of Experience

With URS: 1 Year

### Education

BS/Biological Systems Engineering/2007/University of California, Davis

### Registration/Certification

2008/Engineer-in-Training California/#130538



characterize the riffle and pool features downstream of the Yuba River reservoir; surveyed and took instream GPS readings to characterize spawning habitat. Additionally, for a woody materials research project, she used ArcGIS to coordinate pictures with corresponding GPS points taken above four California reservoirs.

**Student Researcher, Wetlands Research Project, Department of Land, Air & Water Resources, UC Davis, CA, Type of Contract, 2004-2005, Cost:** Ms. Tu conducted water and soil analyses in the lab to evaluate the effectiveness of constructed wetlands as a filter for agricultural runoff in the San Joaquin River, California. Conducted phosphate, nitrogen, ammonium analyses on water and soil samples, used an atomic absorption spectrophotometer, measured pH, electron conductivity, turbidity, particle size, calcium, magnesium, sodium.

**Hydrology Technician, El Dorado National Forest, California, Type of Contract, 2005, Cost:** Ms. Tu performed stream condition inventories, and lake and mountain yellow-legged frog surveys. She used ArcView to find quadrants and watersheds for timber sales. Input data for evaluation of best management practices.

### **Wildlife Biology**

**Fishery Field Technician, Department of Wildlife, Fish and Conservation Biology, UC Davis, CA, Type of Contract, 2007, Cost:** Ms. Tu performed fish habitat assessments along Putah Creek between Winters and Davis, CA.

### **Publications**

“Mokelumne River: Engineered Logjams Project,” Undergraduate Research, Scholarship & Creative Activities Conference, University of California Davis, California, April 21, 2007; Sponsor: Dr. Greg Pasternack, Land, Air and Water Resources.

### **Professional Societies**

Member, American Ecological Engineering Society

### **Chronology**

01/08-Present: URS Corporation, Sacramento, CA

### **Contact Information**

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denise\_tu@urscorp.com

# CHRISTOPHER THAYER

Botanist, Wetlands Specialist

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## **EDUCATION/TRAINING**

- |      |   |
|------|---|
| 1999 | USACE Wetland Delineation and Management Training Certification Program, San Francisco, California              |
| 1974 | Humboldt State University, Arcata, California. Botany and Natural Resources Conservation; undergraduate studies |

## **PROFESSIONAL EXPERIENCE**

- |           |   |
|-----------|---|
| 2007      | Independent Biological Consultant, Walnut Creek         |
| 1998-2007 | Sycamore Associates LLC, Walnut Creek.                  |
| 1997      | Freelance Botanical Consultant, Orinda                  |
| 1992-1996 | Volunteer Botanist, East Bay Municipal Utility District |

Chris Thayer is a highly regarded, field-oriented biologist with more than ten years of professional experience throughout the Bay Area and greater California. Although his emphasis has been in Alameda and Contra Costa counties, his work has taken him north as far as Humboldt and Mendocino counties on the coast, and south to Fresno and Kern counties on the interior. Past duties have included the coordination, scheduling and participation in numerous wetland delineations, biological assessments, vegetation and wildlife habitat assessments, and multiple-season focused botanical surveys for special-status plants and natural communities. He has compiled many comprehensive wetland and terrestrial plant species inventories, performed qualitative and quantitative vegetation assessments and vegetation mapping, analyzed impacts to biological resources, developed mitigation and restoration plans and strategies, and conducted construction monitoring in sensitive habitats. He has overseen and contributed to the preparation of text for hundreds of technical reports, memoranda, letters, and other supporting documents for Environmental Impact Reports, Negative Declarations, and CEQA compliance.

In addition to his far-reaching experience with special-status plant species, including their identification, rarity, distribution, and soil and habitat preferences, Mr. Thayer has extensive knowledge and experience as a field biologist with a number of sensitive wildlife species. These include aquatic species such as California red-legged frog, California tiger salamander, and western pond turtle, as well as terrestrial species such as silvery legless lizard, San Francisco dusky-footed wood rat, Alameda whipsnake, San Joaquin kit fox, Valley elderberry longhorn beetle, Callippe silverspot butterfly, and Coast Range shoulderband snail, among others. Considerable experience with burrowing owl has included numerous habitat assessments and subsequent protocol monitoring of occupied burrows and nesting pairs.

Through his work he has developed a thorough knowledge and familiarity with procedures relating to the California Environmental Quality Act, California Endangered Species Act, Federal Endangered Species Act, Clean Water Act, National Environmental Policy Act, and other relevant local, state, and federal environmental legislation and policies. In his biological consulting capacity, Mr. Thayer has worked with a wide variety of representatives of local municipalities, special districts, Caltrans, private landowners, and residential and commercial developers, as well as various regulatory agencies including U.S. Army Corps of Engineers, California Department of Fish and Game, Regional Water Quality Control Board, U.S. Environmental Protection Agency, and U.S. Fish and Wildlife Service.



## Mark Vania

*Project Scientist*

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### Key Skills

Hazardous Materials Investigations  
Contaminated Site Investigations  
Environmental Sampling  
Project Planning and Management

### Years of Experience

With URS. 18 Years  
With Other Firms. 7 Years

### Education

B.A. Wildlife Management,  
University of Alaska, Fairbanks,  
Alaska. 1986

### Registration/Certification

HAZWOPER 8-hour OSHA  
Refresher Training (Current)  
First Aid and Adult CPR American  
Red Cross (Current)  
URS Project Manager Certification  
(2006)  
HAZWOPER 8-hour Supervisor  
Training (1991)  
HAZWOPER 40-hour OSHA  
Training (1991)  
Loss Prevention System (LPS)  
Behavior Based Safety 8-hour  
Training (2006)  
Smith Safe Drivers System 8-hour  
Training (2006)  
NSTC North Slope Training (2005)  
Building Inspection for Asbestos  
(AHERA) (1992)  
DOT/IATA Hazardous Materials  
Transportation Training (1998)  
ADEC Qualified Sampler (1993)

### Overview

Mr. Vania joined URS in 1989, and has 25 years of field experience in biological and environmental data collection at remote sites throughout Alaska and the Pacific Northwest. His diverse background includes emphasis on Phase I and Phase II Environmental Site Assessments, and Hazardous Building Materials Inspections; he has extensive experience in work plan preparation, collecting environmental samples, contaminated site remediation management, report writing, and interacting with state and federal regulatory agencies. Mr. Vania has a proven record of managing subcontractors and specialists from multiple offices to complete complex projects. He has managed a variety of office and field projects and has an excellent safety record. Prior to 1989, Mr. Vania was employed by the Alaska Department of Fish & Game as a Fisheries Management Biologist. The following projects represent Mr. Vania's experience:

### Project Specific Experience

**Crisis Event Management Services (CEMS), Soil and Groundwater Investigation. *Project Manager and Field Investigator.*** The project consisted of determining the extent of residual soil and groundwater contamination present at the former location of two underground fuel storage tanks and included the installation and sampling of soil borings and groundwater monitoring wells. Mr. Vania's duties included preparation of work plans, technical reports, and a conceptual site model. Mr. Vania interacted with the ADEC on behalf of CEMS and PBG and developed reasonable and obtainable investigation and remedial goals for the site. Mr. Vania contracted and supervised drilling and surveying subcontractors, and procured equipment and supplies for the project. Remedial alternatives including bioremediation, air sparging/soil vapor extraction, ozone sparge, insitu chemical oxidation, enhanced fluid recovery, and excavation and off site treatment were evaluated based on safety, effectiveness, implementability, and cost. The use of a small commercially pre-packaged air sparging/soil vapor extraction system was determined to be the most effective remedial alternative for the site.

**Alaska Department of Transportation (ADOT), Bragaw Street Interchange HAZMAT Building Materials Survey. *Project Manager and Field Investigator.*** Responsible for conducting surveys of 19 properties (45 units) in Anchorage, Alaska. The scope of the surveys included the collection of samples of building materials suspected to contain asbestos or lead-containing paint, and an inventory of materials that are suspected or confirmed to contain PCBs, mercury, and radioactive source materials. Preplanning for the project included the development of a flexible schedule to meet the time frame required for completion.





During development of the work plan for the project, Mr. Vania worked with the ADOT to develop a practical, accelerated schedule for the inspections, determined the number of asbestos and lead paint samples necessary to fully characterize the building materials, and completed the project on time and on budget.

**EPA, Wizard Car Wash Targeted Brownfields Assessment (TBA).**

**Lead Field Investigator.** Responsible for developing EPA approved work and sampling plans, and managing field work for Phase I and II environmental site assessment for the Municipality of Anchorage and Cook Inlet Housing Authority for a community redevelopment project in Mountain View (Anchorage). Geoprobe® Direct Push equipment with a membrane interface probe was used to collect soil and groundwater samples.

**EPA, Atmautluak Dump Pond, Targeted Brownfields Assessment (TBA).**

**Lead Field Investigator.** Responsible for developing EPA approved work and sampling plans, and managing field work for a TBA Phase I environmental site assessment, and subsequent Phase II Site Investigation that consisted of surface water, surface soil and sediment sampling activities in an active tundra dump pond in southwest Alaska.

**EPA, Mountain Village, Old Village Store, TBA. Lead Field**

**Investigator.** Responsible for developing EPA approved work and sampling plans, and managing field work for a TBA Phase II Site Investigation that consisted of surface soil sampling activities at a Brownfields site in Mountain Village, Alaska.

**U.S. Bureau of Land Management Environmental Support Services**

**Contract, Red Devil Mine. Field Scientist.** The Red Devil mercury mine project also included coordination of work plan preparation to perform a \$1,200,000 demolition, encapsulation, and landfill project at the CERCLA site. Wastes included mercury, arsenic, and lead contaminated building debris, soil, and mining waste at an abandoned mine in Red Devil. Work included development of landfill design for encapsulated wastes, the oversight and guidance of the excavation and stockpiling of over contaminated soil, and developing health and safety documents for the project. A SWPPP was also prepared to meet EPA NPDES requirements for the construction project.

**Alaska Railroad Corporation, Anchorage to Eagle River Line**

**Change, WRFL Cleanups. Field Scientist.** The projects consisted of the cleanup of four Wayside Rail Flange Lubrication Devices (WRFLs) on the Anchorage to Eagle River Line Change Project. Standard operations of the WRFLs had resulted in contamination of the rail line ballast and subgrade material from lubricating grease overspray. Mr. Vania oversaw and guided the removal of the contaminated material and collected confirmation samples for laboratory analysis. Upon completion of the project, URS requested and obtained “No Further Remedial Action Required” statuses from ADEC for all four WRFL sites.



**Chevron Texaco Former Kenai Refinery Remediation Project, Nikiski, Alaska. *Field Scientist.*** Mr. Vania assisted in the large-scale remediation project at a former refinery by assisting with sample control, and performing soil and groundwater sampling.

**U.S. Forest Service, Environmental Assessments for abandoned Margaret Bay and Myers Chuck Camps located in the Tongass National Forest, Alaska. *Project Manager and Field Investigator.*** Responsible for conducting a survey of the to identify hazardous building materials including suspect ACM and LBP. An inventory of hazardous materials was also conducted to identify petroleum hydrocarbons and chemicals stored at the sites. The assessments were performed to evaluate for the potential presence of ACM and LBP in all structures located on the sites that were planned for demolition and removal.

**U.S. Forest Service, Engineering Evaluation/Cost Analysis (EE/CA) for Salt Chuck Mine, Tongass National Forest, Alaska. *Field Manager.*** Responsible for collected field data Engineering Evaluation/Cost Analysis of a large abandoned mine site in Southeast Alaska. This ongoing project includes review and synthesis of historic and newly generated site data, evaluation of human and ecological risk, and development and assessment of appropriate removal actions under CERCLA.

**U.S. Forest Service, Engineering Evaluation/Cost Analysis (EE/CA) for Three Mine Sites, Tongass National Forest, Alaska. *Field Scientist.*** Responsible for completing EE/CA of abandoned mine sites under CERCLA. Project duties included review of current and historic site data, participation in the collection of soil, surface water, sediment samples, and work plan and report writing.

**U.S. Forest Service, Engineering Evaluation/ Cost Analyses (EE/CAs), Mahoney, Gold Standard, and Sealevel Mines, Tongass National Forest. Alaska. *Field Scientist.*** Responsible for completion of workplans and EE/CA reports for three sites near Ketchikan in southeast Alaska; including development of risk-based investigation approach; multi-year data summary; critical review of Streamlined Risk Evaluation, engineering alternatives, and recommendations for onsite tailings treatment by cement stabilization; and development of EE/CA addenda based on regulatory oversight.

**Home Depot U.S.A., Site Investigations and Remediation. *Project Manager and Field Investigator.*** Responsible for conducting Phase I and Phase II investigations at potential retail sites throughout Alaska. Conducted initial investigations, developed remedial strategies, and implemented corrective actions in rapid succession to facilitate accelerated building schedules. Interacted with the ADEC to develop reasonable remedial goals for the sites and obtain “No Further Action” status for those sites on which remedial actions took place.



**U.S. Forest Service, PA/SIs, Khayyam Mine/Stumble-On Prospect and Apex Mine, Tongass National Forest, Alaska. *Project Manager.***

Responsible for currently performing a PA/SI of the Khayyam Mine/Stumble-On Prospect, and has previously completed a PA/SI of the Apex Mine in the Tongass National Forest, both abandoned gold mines. Responsibilities include assessment of the presence, nature, extent and magnitude of hazardous substance releases at the sites, evaluation of mine-related features and potential risk to human health and the environment, and determination of the need for removal actions.

**U.S. Forest Service, Potential Responsible Party Search (PRP) for Salt Chuck Mine, Chugach and Tongass National Forest, Alaska. *Project Manager.***

This project involved conducting investigation at five former mining sites located on Forest Service land in the Chugach and Tongass National Forests in Alaska. The scope of work for this project included identifying PRPs for each mine site in order to support civil enforcement actions, which included possible settlement negotiations and litigation to attach liability under the Superfund Amendments and Reauthorization Act of 1986 (SARA) Section 107. Investigation activities conducted by Mr. Vania included: review of government agency files and databases, an archive library search, interviews with persons knowledgeable of historical activities conducted at the mine sites, obtaining a title search for each of the mine sites, and research into the corporate status of selected companies involved with the mine sites. Mr. Vania was responsible for preparing draft and final reports for each mine site.

**Numerous Phase I Environmental Site Assessments throughout Alaska and the Pacific Northwest. *Project Manager/Field Scientist.***

Clients have included the Alaska Department of Transportation, Home Depot, Halliburton Energy Services, KeyBank, AT&T, the U.S. Department of Justice, GE Capital, Pacific First Bank, Alaska Airlines, University of Alaska, City of Seward, Alaska, and Marriott International, Inc. Responsibilities included project management, site reconnaissance visits, historical records review (including aerial photographs), evaluating nearby properties for potential impact to site conditions, and report preparation including recommendations for additional sampling and analysis if warranted.

**Pepsi Bottling Group, Inc., Drainage System Evaluation, Limited Compliance Assessment, and Corrective Actions. *Project Manager and Field Investigator.***

Responsible for investigation of warehouse and distribution facilities located in Anchorage, Fairbanks, Soldotna, and Juneau Alaska. Drain system evaluation included: review of asbuilts of facility drainage systems; dye testing floor drains to confirm drain connections and discharge points; and conducting a limited compliance assessment related to discharges to the drains, solid waste management and underground storage tanks (USTs). Corrective actions included: characterization and closure in place of two 500-gallon USTs; installation of an aboveground used oil storage tank and burner system; and the reconfiguration of an automotive shop oil/water separator overflow



system. Mr. Vania was responsible for conducting the drainage system evaluation and compliance assessment, the selection and coordination of all subcontractors, and obtaining the proper permits and approvals from city building departments and state regulatory agencies.

**ECI/Hyer, Inc., Hazardous Building Materials Survey of the Historic Railroad Depot, Anchorage, Alaska. *Project Manager and Field Investigator.*** Responsible for conducting a survey of accessible interior and exterior portions of the depot site to identify hazardous building materials including suspect asbestos-containing materials (ACM), and lead-based paint (LBP), and potentially PCB containing fluorescent light fixtures. The hazardous building materials survey was part of an overall building condition survey conducted prior to remodeling the depot building.

**U.S. Navy, Amchitka Island Facilities Demolition and Environmental Closeout. *Field Scientist.*** Responsible for the collection of soil, asbestos and lead-paint samples in support of development of construction specifications for demolition and environmental closeout of extensive Naval facilities in a remote setting. Evaluated logistical factors, assisted in developing cost estimates, and prepared specific procedures for addressing environmental concerns.

**U.S. Forest Service – Third Party Oversight of The Investigation and Cleanup of 16 Former Log Transfer Sites National Forest, Alaska. *Project Manager and Field Scientist.*** Responsible for providing third party technical review of cleanup/removal work plans and reports, and providing oversight of cleanup/removal activities acting as a technical inspector/advisor for the Forest Service.

**Site Investigation Energy Coating Lease Pad Prudhoe Bay, Alaska. *Field Manager.*** Responsible for investigation of the location of a former pipe coating facility. The investigation was conducted in preparation for the final cleanup of the pad prior to returning the property to the State of Alaska. Project duties included directing excavation activities of subcontractors, the digging and sampling of numerous shallow test pits, and mapping the locations of and preparing volume estimates of contaminated soil and remaining buried debris. The next phase of this ongoing project will include the participation in the negotiations with ADEC and ADNRR for site cleanup levels and additional debris removal requirements. URS is currently working with potential subcontractors to provide innovative and cost saving options for the excavation and remediation of an estimated 6,000 cubic yards of contaminated soil.

**Phases I through IV Remedial Investigation/Feasibility Study (RI/FS), Northway Staging Field Site, Northway, Alaska, for the U.S. Army Engineer District, Alaska. *Project Manager /Field Scientist /Health and Safety Officer.*** Project involved mapping, field screening, debris and physical hazard inventory, sampling of soils and sediment, surface water-groundwater interaction study, sampling of



shallow and subpermafrost groundwater for flow path and contaminant transport identification, and risk analyses at 38 of the original 52 areas of concern. The project also included native community meetings, and preparation of numerous documents, including workplans, phased RI and FS reports, CERCLA decision documents, and reports specific to background data, physical hazards, and community relations. Mr. Vania assisted in development of the project work plans, participated in public meetings, compiled historic and current information on the site, and participated in field sampling activities. Mr. Vania also developed, and wrote the Record of Decision (ROD) and Proposed Plan for Operational Unit 1 of the Northway Staging Field which included 32 of the 52 original sites investigated.

**Phase, I Remedial Investigation for the U.S. Army Engineer District-DERP sites at Kiska and Little Kiska Islands, Aleutian Islands, Alaska. *Field Investigation Team Leader.*** The project included preparation of technical memoranda, workplans for field work and risk assessment, and reports for RI activities at various former military sites. Onsite investigation included hazardous waste source identification, surface water flow mapping, soil sampling, chemical field screening, geologic mapping, surface water-groundwater interaction study, and ordnance documentation.

**Clear Air Force Station, Clear, Alaska. *Field Investigator.*** Responsible for the collection of soil and groundwater samples and assistance with report preparation.

**Phase II Investigation Electrical Substation in Klawock, Alaska. *Project Manager /Field Scientist.*** Responsible for preparation of a site specific Health & Safety Plan in accordance with OSHA regulations. Soil samples were collected from soil borings. Groundwater monitoring wells were also installed into each soil boring and groundwater samples were collected. Upon completion of analysis of all samples, a Release Investigation report was prepared to include all findings. A draft report was submitted to the client and Alaska Department of Environmental Conservation (ADEC). A final version was prepared and submitted, incorporating client and ADEC comments.

**Environmental Baseline Assessments at nine sites in southeast Alaska for the U.S. Forest Service. *Project Manager /Field Scientist.*** These projects involved conducting baseline assessments to document the environmental condition of the sites and potential presence of contaminants. Mr. Vania performed visual inspections and photographed the sites. Soil samples were collected to characterize the nature and extent of potential contaminants in surface soils. Soil sample locations were recorded by GPS for possible future cleanup actions. Mr. Vania prepared reports for each site summarizing the findings of the site visit and the sample results.

**Environmental Site Assessments and third party oversight of Phase II Investigations, four manufacturing facilities in Minnesota,**



**Washington state, Canada, and Mexico. *Project Manager.***

Conducted for property transfer purposes for Native Corporation in southeast Alaska.

**Skagway Ore Terminal offshore baseline contamination investigation for Alaska Industrial Development and Export Authority. *Principal Investigator.***

Responsibilities included offshore sediment, benthic, and water sampling to determine contamination levels from prior ore terminal operations.

**Phase I and Phase II property assessment at a National Weather Service Facility in Anchorage, Alaska for SRI International. *Project Manager/Asbestos Inspector.***

The work included collection of soil, water, and building materials samples to evaluate potential hazardous materials contamination in soil and/or groundwater that may have resulted from former or current site uses and to assess whether asbestos-containing materials are present in the site buildings.

**Remedial investigation, Umatilla Army Depot, Hermiston, Oregon. *Field Investigator.***

Responsible for groundwater well development and sampling as part of an ongoing investigation of a Superfund site.

**Asbestos/Lead Based Paint Survey at the U.S. Coast Guard Support Facility in Kodiak, Alaska. *Project Manager/Field Investigator.***

The investigation was performed to evaluate the potential presence of asbestos containing materials and lead based paint in two buildings scheduled for remodeling. Asbestos investigations included collection of bulk samples, and mapping and quantification of suspected materials.

Recommendations for remedial options and costs were prepared. The Lead Based Paint Survey included collection of bulk samples and mapping and quantification of suspected painted surfaces.

**On-site monitoring of asbestos abatement activities at the Snow White Cleaners building located in Anchorage, Alaska. *Project Manager/Field Investigator.***

The project included. collection of air samples throughout the abatement activities; supervision of contractor activities; coordination of work with client representatives and regulatory agency personnel; and coordination of project documentation.

**1990 and 1991 Exxon Valdez Oil Spill Salmon Studies. *Field***

***Biologist.*** Project responsibilities included supervision and coordination of field biologist crews; collection of salmon eggs, alvein, and fry; tow netting and behavior observations of fingerling; stream surveys of spawning locations and densities; tissue sampling of adult salmon; compilation of temperature, salinity, and dissolved oxygen data; sample processing and shipment (including chain of custody); and field logistics.

**Marine and Terrestrial Ecology, NOAA/NMFS Consolidated Facilities Environmental Impact Statement, Juneau, Alaska for NOAA. *Field Biologist.***

Provided baseline data and impact analysis for





the project which considered development of a proposed new marine lab and office facilities at Auke Bay, Alaska.

**Wildlife habitat and terrestrial ecology, Southern Intertie Routing Study for Chugach Electric Association. *Field Biologist.*** This project was a routing study for a new transmission line from the Kenai Peninsula to Anchorage, Alaska.

**Abnormality Sampling Program, Field Training for the Alaska Department of Fish and Game. *Project Biologist.*** Assisted in developing and implementing a training program to teach proper sampling protocol for preserving and shipping samples of sick or unusual-appearing animals harvested for food. Training was provided to volunteers in 16 coastal communities in Prince William Sound, Kenai Peninsula, Kodiak Island and Alaska Peninsula.

**Indian Booster Station Fuel Spill Remediation Project, Defense Fuel Supply Center. *Field Biologist.*** Responsible for directing revegetation efforts of field crews, designing landscape of public trailhead and visual berms with native plant species, as well as identifying and tagging native plant species for transplanting at backfilled trench and biocell areas.

## **Publications**

Darigo, N.J., J. Hedgecock, M.A. Vania, and W. Loskutoff, and M.D. Gray. 2007. A Focused Risk-Based Approach to Closure Investigation of Intertidal Tailings, Salt Chuck Mine, Tongass National Forest, Alaska. Northern Latitudes Mining Reclamation Workshop, Juneau, Alaska. 10 p. May 15-17.



## J. Wayne Vogler

Ecologist

### Areas of Expertise

Wetland Delineations  
Coastal Dune Ecosystems  
Flora/Fauna Surveys  
Mapping Services  
HAZWOPER Trained

### Years of Experience

With URS: 1 Year  
With Other Firms: 11 Years

### Education

BS/Biological Sciences/1994/  
University of California, Irvine

### Registration/Certification

1997/U.S. Army Corp of Engineers  
Wetland Delineation Certification  
Program  
1997/Lead Related Construction  
Supervisor (#S2112) and Project  
Monitor (#M2112), California  
Department of Health Services  
1995/Asbestos Certified Site  
Surveillance Technician, #95-1831,  
California Department of  
Occupational Safety and Health

### Overview

Mr. Vogler is an ecologist with extensive experience working with natural dune habitats along the Central California coast. Wayne's diverse experience ranges from site investigations of industrial sites to restoring native habitats at a large soil and groundwater remediation site. Wayne's project experience has included working with federal, state, and local agencies to find consensus among several parties, often with conflicting interests, toward the successful completion of the project. Wayne developed and instituted monitoring protocols, developed restoration plans, and monitored one of the largest hydrocarbon remediation projects along the U.S. Western Coast. Wayne has maintained compliance with Health and Safety training requirements, including some specialized training, since 1996; he is fully-versed and indoctrinated in the health and safety culture.

### Project Specific Experience

#### Project Management

- Ecological Field Coordinator/Monitoring Task Leader for the Chevron Guadalupe Restoration Project – Develop, coordinate, and conduct biological monitoring and permit compliance of 2,800 acre remediation site. Participate and direct field crews in performance of botanical and wildlife monitoring efforts. Interact with construction personnel and coordinate efforts to avoid disturbance to sensitive species and habitats. Develop and provide senior review of ecological reporting documents. Initiate protocols to ensure compliance with 1,200+ permit conditions. Delineate federal and state jurisdictional wetlands. September 1997 to June 2006.
- Phase I ESAs, Asbestos and Lead Surveys – Managed and trained staff in site assessment and asbestos/lead investigations. Conducted 100+ site assessments in California, Colorado, Hawaii, Illinois, Indiana, Nevada, and New Mexico. Subject properties ranged from multi-acre vacant, natural lands to large industrial facilities to a pharmaceutical manufacturing plant.

#### Sensitive Species Survey Experience

##### **California Red-legged Frog (*Rana aurora draytonii*)**

- San Luis Obispo and Santa Barbara County – Conducted presence/absence surveys for California red-legged frogs and mapped habitats. 1999 through present.
- Chevron Guadalupe Restoration Project - Permitted to survey, capture, handle, and relocate California red-legged frogs. Includes pit-tagging and radio-tracking of individuals to monitor relocation efforts. Survey efforts for tadpoles, including dip-netting and use of minnow traps. 1999 through present.

### **Desert Tortoise (*Gopherus agassizii*)**

- Mojave Desert – Completion of the Desert Tortoise Council Annual Surveying, Monitoring, and Handling Techniques Workshop. Training included survey techniques for individuals and their sign, assessment of habitat, handling techniques, and burrow construction. 2003.

### **Tidewater Goby (*Eucyclogobius newberryi*)**

- Santa Barbara Airport, Los Carneros and Tecolotito Creek Realignments – Captured and relocated individuals from the former creek channels. Field work included seining creek channels, dip net capture, identification of listed and common species encountered, and transportation/release. 2006.
- City of Santa Barbara Laguna Channel Tide Gate Repair – Conduct survey for tidewater goby prior to work activities. Post-project sampling of new stream channel to determine tidewater goby re-colonization. Captured and relocated individuals prior to cofferdam placement and de-watering activities; monitored construction activities to avoid impacts to species. Field work included seining tidal lagoon channels, installation of blocking nets, capture and identification of listed and common species encountered, and transportation/release. 2006.

### **Wetland Delineations and Restorations**

- Performed the initial survey and subsequent update surveys to identify and delineate wetlands according to federal definitions at the 2,800-acre Guadalupe Restoration Project. Employed both routine and comprehensive survey methods with findings reviewed by ACOE and NRCS. 1997 and 2004.
- A contributing author and editor to an encompassing wetland restoration and mitigation plan at the Guadalupe Restoration Project. Plan elements included the satisfaction of both federal and state resource agencies. Designed wetland habitat elements for the enhancement of both California red-legged frogs and La Graciosa thistle. Plan was approved by several federal and state resource agencies with accommodation by the U.S. Army Corp of Engineers describing the Plan as an example for future plans to ascribe toward. 2004 through 2006.
- Guadalupe-Nipomo Dunes – Conduct an identification survey of wetland habitats throughout the entire dunes complex. Developed identification and screening criteria, classification and descriptive identifiers, and survey methodology. Employed aerial photography interpretation for initial target identification. Mapped wetland habitats with sub-meter GPS unit for data to be incorporated into an existing GIS project. 2004 to present.
- Administrative Hearing with the Army Corp of Engineers for the Santa Maria Airport District. Presented to Hearing Officer in support of District's opinion that wetlands unfairly identified by ACOE personnel. Hearing resulted in no action taken by ACOE against District.

### **General Vegetation Surveys, Wildlife Surveys, and Habitat Assessment**

- Conducted regimented surveys and mapping efforts for La Graciosa thistle (*Cirsium loncholepsis*), surf thistle (*Cirsium rhotopilum*), and beach spectacle-pod (*Dithyrea maritima*). Initial survey and mapping of presence. Annual censusing of populations. Monitoring of construction activities to ensure avoidance of disturbance to individuals and habitat. Summer 1998 to present.
- Presence survey. Population mapping, and habitat assessment for Gaviota tarplant (*Deinandra increscens* ssp. *villosa*) for a naturally vegetated 16-acres site at Vandenberg Air Force Base, California. June 2006.
- Habitat Inventory and Ecological Database (HIED) development for the 2,800-acre Guadalupe Restoration Project. Scope included the initial mapping of sensitive flora, sensitive fauna, weed infestation, habitat quality, and several other parameters. Data developed from aerial photograph interpretation, qualitative and quantitative surveys, and specific presence/absence surveys per species. Updated annually. 2002 to present.
- Pre-disturbance assessment and restoration monitoring surveys to determine habitat composition and quality. Developed protocols for photograph documentation efforts. Spring 1998 to present.
- Construction monitoring to ensure compliance with over 1,200 permit conditions. Work with contractors and construction personnel to minimize native habitat disturbance and avoid sensitive and listed flora and fauna. Spring 1998 to present.

#### **Other Reports and Projects**

- Worker identification guide to sensitive plants and animals in SLO County to Tosco pipeline workers. 1999.
- Collection of tadpoles and soil in support of an ecological risk analysis at a former gas plant along Santa Barbara coast.

#### **Specialized Training**

- Annually/8-Hour HAZWOPER Annual Refresher
- 2006/Loss Prevention System Training, a Behavior Based Safety Program
- 2006/Smith System Advanced Driving Traffic Safety
- 2003/PADI Certified Open Water Diver
- 2001/Stormwater Pollution Prevention on Construction Sites, California State Water Resources Control Board
- 1999/Certified Beer Master, Anheuser-Busch, Inc.
- 1996/40-Hour Hazardous Waste Workers' and 24-Hour First Responder Health and Safety Training

#### **Chronology**

- 06/06-present: URS Corporation, Santa Maria, CA



- 10/02-06/06: (sd)<sup>2</sup> ecology, Grover Beach, CA
- 06/95-09/02: LFR, Inc., Santa Maria, CA

**Contact Information**

URS Corporation  
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## Matthew J. Wartian, Ph.D.

### Ecologist

*Senior Ecologist*

#### Areas of Expertise

Restoration Ecology; Native Coastal Ecosystems; Statistical, Digital, and Graphical Data Analyses; and Community and Ecosystem Ecology,

#### Years of Experience

With URS: <1 Year

With Other Firms: 5 Years

#### Education

Ph.D., Biology, 2006, University of California, Los Angeles

B.S., Biology, 2001, California State University, Long Beach

Minor, Chemistry, 2001, California State University, Long Beach

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#### Overview

Dr. Matt Wartian has extensive experience in marine and terrestrial coastal ecosystems. Matt has designed and implemented multi-year research projects analyzing, monitoring, and restoring native coastal ecosystems. Furthermore, Dr. Wartian has supported the University of California Los Angeles (UCLA), Sempra Energy, Pacific Gas and Electric (PG&E), and the City of Los Angeles Department of Public Works Bureau of Sanitation Watershed Protection Division with several long term private and public funded restoration projects in southern California. Dr. Wartian's extensive teaching experience at UCLA has facilitated the development of strong communication skills that enable him to convey technical information in an effective and intelligible manner.

#### Experience

##### ***Pacific Gas and Electric; North Baja Natural Gas Pipeline, Southern California and Western Arizona; Consulting Ecologist***

Supported the design and implementation of a 5-year experimental restoration program that assessed natural re-vegetation of native desert plant communities. Study plots were established in both of the major native cover types found along the pipeline right-of-way (ROW). These two cover types were Sonoran creosote bush scrub and desert dry wash woodland, including Sonoran microphyll woodland. Treatment plots along the ROW received two different seed mixes and two different application rates. Control plots were established in undisturbed areas immediately adjacent to the ROW. Data was and is being collected over a 5-year period to statistically compare treatment plots to control plots. Study questions included: (1) Is there a differential re-vegetation response for supplemental seeded plots compared to unseeded study plots as quantified by several variables (i.e., herbaceous seed supplement, woody seed supplement, high application rate seed supplement, low application rate seed supplement and so forth)? (2) Is there a differential re-vegetation response between ROW and immediately adjacent undisturbed area as measured by woody plant species composition, native plant species composition, growth and regeneration of woody plants, cover of woody plants, cover of herbaceous plants, and cover of non-native plant species?

##### ***Sempra Energy Resources; La Rosita Transmission Line Project, Southern California; Consulting Ecologist***

Supported development and implementation of a habitat restoration plan which adequately provides the strategy, maintenance regime, and monitoring schedule for restoration of native desert habitat in the vicinity



of the recently-constructed La Rosita Transmission lines. This area includes special status rare plants, Flat-tailed Horned Lizards, and Burrowing Owls. The plan includes control of invasive tamarisk species along the right-of-way (ROW) for both the Interger and the Sempra transmission lines and a clearly defined area adjacent to the Imperial Valley substation, owned and operated by San Diego Gas & Electric (SDG&E). This project included compensatory restoration off the ROW to enhance native desert habitat. Initial restoration plans had called for direct restoration of areas disturbed by construction, which was determined to be impractical due to the high use of the area by the Border Patrol vehicles. Consequently, an area designated by the BLM is being restored by removing tamarisk and providing follow-up removal services for three years. This restoration plan is designed to meet the requirements of the ROW terms and conditions for BOTH the Sempra AND the Interger transmission lines.

***City of Los Angeles Department of Public Works Bureau of Sanitation Watershed Protection Division; Design Plan for a Constructed Wetland Habitat at Augustus Hawkins Natural Park; Consulting Ecologist***

Supported development of design criteria and objectives for the construction plan for the City's first storm water treatment wetland. Design criteria and objectives were derived from established standards in the SWRCB Proposition 13 Non-point Source Pollution Grant Program and Regional Water Quality Control Board's (RWQCB) Watershed Management requirements. The following design objectives were incorporated into the plan: (1) improve urban storm water flood protection, (2) create a balance between water reclamation and minimum water volume necessary to support the protection and enhancement of fish and wildlife habitat, (3) establish a functional wetland and aquatic habitat in a heavily urbanized area and underserved community, (4) control vectors that represent public health and safety concerns (e.g., mosquitoes), (5) improve runoff water quality and reduce non-point source pollution in the Compton Creek Watershed, which is tributary to the Los Angeles River, and (6) improve public safety while enabling ease of maintenance.

***UCLA, Mugu Lagoon, Pt. Mugu Naval Air Weapons Station; Graduate Student Researcher***

Assisted with field studies to assess differences among restored and natural areas of southern California estuaries. Performed percent cover of salt marsh vegetation and surveys of invertebrate and avian fauna. The results of which indicated that restoration of wetlands often provides suitable habitat for highly mobile species, such as migratory birds, however, ecosystem function is dependent upon sediment characteristics, such as grain size and nutrient concentrations as well as species composition and richness.



***UCLA, Newport Beach Back Bay, Newport Beach, California; Graduate Student Researcher***

Participated in a study of nitrogen fixation and denitrification within sediments of southern California estuaries. Collected sediment and water samples within inter-tidal zones to determine the spatial and temporal differences in ecosystem services provided by bacteria on and within estuarine mud flats.

***UCLA, Newport Beach Back Bay, Newport Beach, California; Graduate Student Researcher***

Worked as a team member to assess the factors that affect macroalgal blooms within southern California estuaries. Collected samples of macroalga, *Enteromorpha intestinalis*, along with water, sediment, and vegetation samples to better understand the relative importance of physical and biological factors that regulate the abundance of bloom-forming algal species.

***California State University Long Beach, Palos Verdes; Graduate Student Researcher***

Performed field studies that examined the physical and biological factors that determine distributions of inter-tidal invertebrate species and the relative abundance of inter-tidal and sub-tidal macroalgal species, e.g. the giant kelp, *Macrocystis pyrifera*. Percent cover of organisms was surveyed along gradients of physical disturbance and human use in order to determine correlations of said factors with the relative abundance and richness of species.

***UCLA, California Ecosystems; Graduate Student Teacher.***

Lectures, laboratory, and field trips introduced students to an array of southern California ecosystems focusing on community composition within sage scrub, chaparral, riparian, wetland, coniferous forest, and desert communities. Laboratory and field trips included plant identification and taxonomy along with the ecological factors that determine distributions of plant communities and species (e.g., temperature, humidity, soil type, and exposure to solar radiation).

***UCLA, California Field Ecology; Graduate Student Teacher.***

Introduced students to an array of field techniques used to survey and sample terrestrial and inter-tidal communities of central and southern California including; costal sage scrub, rocky inter-tidal, estuarine, chaparral, and desert communities. Survey methods included percent cover, line intercept, timed surveys, and behavioral surveys along with analysis techniques and scientific report writing.





***UCLA, Introduction to Ecology and Behavior; Graduate Student Teacher.***

Lectures and laboratory work to examine behavior and ecological interactions of organisms within native California ecosystems. Students performed ecological and behavioral field studies of southern California flora and fauna.

**Awards**

2001-2002. Certificate of Distinction in Teaching awarded by the UCLA Life Science Division

2004-2005. Certificate of Distinction in Teaching awarded by the UCLA Life Science Division

2001, 2002, 2003, and 2004. Department of Ecology and Evolutionary Biology Dean's Commendation for Excellence in Teaching

National Science Foundation Grant

UCLA Latin American Studies Center Doctoral Student Research Grant

President's Honor List, California State University, Long Beach

Dean's Honor List, California State University, Long Beach

**Specialized Training**

NAUI Open Water SCUBA certification

American Academy of Underwater Sciences SCUBA certification

Emergency Medical Technician and related first responder certifications

**Publications**

Fong P, Smith TB, Wartian MJ (2006) Protection by epiphytic cyanobacteria maintains shifts to macroalgal-dominated communities after the 1997-98 ENSO disturbance on coral reefs with intact herbivore populations. *Ecology* 87: 1162-1168.

Fong P, Smith TB, Wartian MJ (2003) Ephemeral macroalgal blooms on eastern tropical Pacific reefs: Investigating the roles of nutrients, herbivory, and chemical defenses of epiphytic cyanobacteria. Oral presentation at 10th International Coral Reef Symposium, 2003, Japan.

Wartian MJ, Fong P, Smith TB (2002) Bottom-up regulation of macroalgal growth on an eastern tropical Pacific reef. Poster presented at Western Society of Naturalists meeting, 2002, Monterey, California.

Wartian MJ, Fong P (in prep) Upwelling-driven bottom-up regulation of tropical eastern Pacific coral reef community dynamics.

Peggy Wood (cont.)

<b>Graduate Research Assistant</b>	Utah State Univ., Logan, UT (10/84-12/86). Master's research: documented deer-vehicle collision frequency and distribution on three Utah highway segments; provided interceptive attractant to modify deer movement patterns and reduce collision frequency. Taught Natural Resources 101 two quarters on issues relating to natural resource conservation.
<b>Range Research Technician</b>	Utah Div. of Wildlife Resources, Salt Lake City, UT (6/85 -9/85). Sampled vegetation frequency and density to evaluate condition of big game wintering range in south-central UT.
<b>Research Assistant</b>	Alaska Dept. of Game and Fisheries, Anchorage, AK (7/84-8/84). Conducted vegetation transects to estimate moose browse biomass in the Susitna River Valley, central AK, preliminary to proposed hydroelectric dam site; used Landsat photographs to locate and access sampling transects by helicopter; utilized Epson mini-computers in the field.
<b>Bald Eagle Hack Site Attendant</b>	NJ Div. of Fish, Game & Wildlife, Port Norris, NJ (6/83-9/83). Raised six bald eagle young in a hack tower; telemetry tracked the fledglings following their release using a vehicle, boat and small plane; conducted a study of bald eagle pre-fledging behavior in a hack tower.
<b>Nature Education Counselor</b>	Wharton State Forest, NJ (8/83). Instructed children aged 8 to 16 on basic ecological concepts in the Pine Barrens of NJ.

**PUBLICATIONS**

- Weaver, J.L., P. Wood, D. Paetkau, and L.L. Laack. 2005. Use of scented hair snares to detect ocelots. *Wildl. Soc. Bull.* Vol 33(4):1384-1391.
- Weaver, J.L., C. Arvidson, and P. Wood. 1992. Two wolves, *Canis lupus*, killed by a moose, *Alces alces*, in Jasper National Park, Alberta. *Canadian Field Naturalist*. 106(1):126-127.
- Wood, P. and M.L. Wolfe. 1988. Interceptive feeding as a means of reducing deer-vehicle collisions. *Wildl. Soc. Bull.* Vol 16(4):376-380.

**PERSONAL INFORMATION**

Birth date: 28 September 1962                      Health: Excellent  
Interests: telemark skiing, running, backpacking, kayaking, rock climbing, reading, music, and travel.

**REFERENCES**

- Dr. John Weaver: Wildl. Cons. Society, St. Ignatius, MT 59865    406/745-0169.  
Dr. Christina Vojta: US Forest Service Research Station, Flagstaff, AZ 520/556-2182.  
Dr. Alice Karl, Terrestrial Ecologist, Davis, CA 530/304-4121.  
Dr. Justina Ray: Wildlife Conservation Soc., Toronto, Canada 416/406-5219.



Wartian MJ, Fong P (in prep) Top-down and bottom-up regulation of community structure and resilience on tropical eastern pacific coral reefs in upwelling and non-upwelling regions

Wartian MJ, Fong P (in prep) Upwelling drives seasonal changes in top-down and bottom-up regulation of tropical eastern Pacific coral community dynamics

Wartian MJ, Fong P, Wartian AN (in prep) Top-down and bottom-up regulation of algal community development on upwelling and non-upwelling coral reefs of the tropical eastern Pacific



## Timothy R. Witman

*Ecologist*

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### Overview

Mr. Witman serves as an Ecologist for the URS Salt Lake City Office. His work experience includes wetland delineations, overview and compliance of construction activities, and federal and state permitting. He is experienced with federal agencies such as U.S. Army Corps of Engineers (ACOE), and the EPA National Pollutant Discharge Elimination System (NPDES) permitting program. Mr. Witman has applied these skills to a wide range of projects including, residential and commercial developments, transportation projects and utility projects.

Mr. Witman has prior experience conducting wetland delineations and permitting under the Massachusetts Wetlands Protection Act and local regulations. He routinely works with Global Positioning System (GPS) data collection units, and is familiar with GPS associated software such as Pathfinder Office©. Mr. Witman also incorporates GPS data into AutoCAD© in order to create plans and maps.

### Areas of Expertise

Wetland Delineations  
Erosion and Sediment Control  
Construction Monitoring

### Years of Experience

With URS: Less than 1 Year  
With Other Firms: 3 Years

### Education

BS/2003/Environmental  
Studies/Geology  
St. Lawrence University

### Registration/Certification

2007/Certified Professional in  
Erosion and Sediment Control

### Project Specific Experience

**Temple Mountain Energy/Ames Construction, Vernal, Utah:** Mr. Witman assisted with conducting a baseline ecology survey at the Asphalt Ridge #1 tar sands mine site. The baseline survey included vegetation transects, wildlife survey, a review for threatened and endangered species, soil sampling and a delineation of waters of the United States. Upon the completion of field work he prepared a baseline report for submittal to UDOGM in order to complete a NOI filing and to compile a post-mining reclamation plan.

**William Gas Pipeline, La Plata County Colorado:** Mr. Witman assisted with completing and submitting Jurisdictional Determination forms to the United States Army Corps of Engineers for the maintenance and repair of a gas pipeline. These forms were based on the Corps Arid West Supplement and were used to determine the jurisdiction of streams and wetlands impacted by the project. He took existing field data, interpreted aerial photos and topographic maps in order to determine if the sites along the pipeline would or would not be jurisdictional. The work resulted in the Corps issuing a Nationwide Permit 12 for this pipeline project.

**National Grid/Massachusetts Electric Company, Salem, Massachusetts:** Mr. Witman performed coastal wetland resource area delineation and conducted research for existing Massachusetts Chapter 91 Licenses and plans. He assisted with the preparation of the Massachusetts Chapter 91 License Application and Notice of Intent as well as the Army Corps of Engineer Section 10 and Section 404 permit applications for the implementation of insitu bio-remediation projects within the coastal beach, tidelands and waters of Collins Cove, Salem.

**Weymouth Naval Air Station, Weymouth, Massachusetts:** The Phase I redevelopment project was the first phase for the construction of a mix use development project at the former Weymouth Naval Air Station. Mr. Witman was responsible for conducting wetland resource area delineation and reviewing previously delineated wetland areas within the site. In addition, he prepared wetland permits and documentation which included the Notice of Intent, Invasive Species Control Plan, and Wetland Replication Monitoring Plan.

**National Grid, A53 & B54 Refurbishment Project Worcester, Massachusetts:** Mr. Witman was the task lead responsible for organizing wetland delineation teams and conducting the delineation along a 10 mile stretch of electrical transmission line. He collected and managed GPS data in order to prepare and modify National Grid Plans. Mr. Witman prepared the Watershed Determination of Applicability Permit Application and coordinated with state agencies for approval. He also coordinated with National Grid Engineers and contractors to assist with the preparation of construction documents.

**NEEWS, Transmission Line Reinforcement Project, Massachusetts to Rhode Island:** Mr. Witman was responsible for leading and coordinating vernal pool and wetland delineation teams along a 17 mile section of electrical transmission right of way. Mr. Witman prepared background information packages of the route including aerial photos, topographic maps, wetland maps, soil maps, and Natural Heritage and Endangered Species maps. He managed and organized GPS data, wetland datasheets, wetland summary forms, and photographs for future preparation of permit applications.

**Olin Chemical, Wilmington, Massachusetts:** This is a contaminated site with ongoing remediation activities. Mr. Witman would visit the site each month to visually monitor changes in runoff, stream flow and water quality from the site to bordering vegetated wetlands. Weekly reports, prepared by Olin, were reviewed and Mr. Witman prepared a monthly letter report to the state and EPA. Mr. Witman also prepared a vegetation analysis report within the wetland mitigation areas and assisted with the preparation of a watershed analysis. This analysis proved under the Massachusetts Wetlands Protection Act that the stream was not a perennial stream.

**Central Artery/Tunnel Project, Boston, MA:** Mr. Witman was responsible for preparation of permit packages in order to receive Certificates of Compliance for Orders of Conditions from the Cities of Boston, Cambridge, and Revere; and Waterways Licenses from the Department of Environmental Protection. Additional responsibilities included providing permit support to the South Boston and East Boston permit manager and acquiring street numbers from the City for new structures.

**Coastal Zone Management Statewide Chapter 91 Jurisdictional Mapping Project, Massachusetts:**

The project goal was to map the historical shoreline of Massachusetts in order to create a presumptive historic shoreline as it relates to Chapter 91 jurisdiction in Massachusetts. Mr. Witman organized and conducted research in local municipal offices, libraries, The State House, state agencies and various private repositories. Relevant historical materials were obtained and digitized.

**Route 3 Roadway Widening & Culvert Extension, Burlington, Massachusetts:**

Mr. Witman was responsible for construction monitoring and oversight of the wetland mitigation while work occurred within and adjacent to wetland resource areas. Violations to the Order of Conditions by the contractor, prior to Mr. Witman's involvement, nearly resulted in an Enforcement Order. Mr. Witman provided mitigation measures and weekly reports to the local agency in order to allow the work to continue.

**Preparation of EPA NPDES SWPPPs for Multiple Development Projects, Massachusetts:**

Mr. Witman has prepared numerous Notice of Intents and Storm Water Pollution Prevention Plans for a variety commercial and residential construction projects. This work included coordinating with engineers to prepare Erosion and Sediment Control Plans and conducting weekly site inspections to ensure that the contractors are adhering to the plan or to modify the plan if necessary.

**Professional Societies/Affiliates**

Society of Wetland Scientists

**Training**

U.S. Army Corps of Engineers Arid West Supplement, Wetland Training Institute, Boise, ID

OSHA 10-Hour Construction Safety

U.S. Army Corps of Engineers Wetland Delineator 40-Hour Course, University of New Hampshire, Durham, New Hampshire

Wetlands Ecology, University of Massachusetts Lowell, Massachusetts

U.S. Army Corps of Engineers Highway Methodology, New Hampshire

Delineating Hydric Soils in Human Disturbed Sites, University of New Hampshire, Durham, New Hampshire

**Chronology**

08/2007 – Present: URS Corporation, Salt Lake City, Utah

10/2003 – 6/2007: Environmental Planner, BSC Group Inc., Boston, Massachusetts

# **Peggy Wood**

## **Wildlife Biologist**

1133 N. Cedarview Dr.  
Bozeman, MT 59715  
Cell: (435) 881-6444  
Email: pegwood@mtwest.net

### **EDUCATION**

- MS Wildlife Ecology, 1986. Utah State University, Logan, UT.  
Thesis: Interceptive Feeding as a Means of Reducing Deer-vehicle Collisions.
- BS Wildlife Science, 1984 - With Honors. Rutgers University, NJ.

### **RESEARCH SKILLS**

Population sampling: species presence surveys; area coverage techniques for animal and bird species, population size estimation using various transect methods; plant frequency and density transect methods; fish sampling and tagging methods. Scientific writing. Telemetry tracking techniques; behavioral information collection; methodical and concise data organization, tabulation, and analysis. Critical thinking.

### **EXPERIENCE**

#### **Biological Consultant**

Peggy Wood, Inc. - An independently owned company. Bozeman, MT (1/90-present).

Research with the Wildlife Conservation Society (WCS) in 2003 on wolverines in the NW region of the Greater Yellowstone Ecosystem, Madison valley, MT. Ran traps and worked with veterinarian on captured wolverine. Lynx research for WCS from 1998-2001 in MT, WA and NY involving non-invasive snagging of lynx hair for DNA analysis to identify species and individual identity. Conducted density sampling transects for snowshoe hares, the lynx prey base, in MT and ID. Adapted this hair snagging technique for detection of ocelots in south TX in 1999 and 2000.

Conducted goshawk surveys in the Black Hills of South Dakota (spring 2005); involved broadcasting calls and tracking adults to the nest.

Seventeen years of experience working with desert tortoises including federal permits for handling. Research projects include population estimation by mark-recapture method, line distance density estimation using transects across the Mojave (spring, summer 2001), and line-intercept method (Fort Irwin, 1999). Supervised crew of 12 on 3 NV tortoise population study plots (spring 1994); field researcher on 7 AZ tortoise population study plots (fall '91, '92, '93) & 2 CA plots (spring '91). Data included location, weight, measurements, health, and photographs; assisted writing final reports. Other tortoise projects include resource assessment surveys in CA, NV and UT on over 30 projects including a 6 sq. mi. proposed wind farm ('05), a 7 sq.mi. Hyundai Motor vehicle test track ('04), pipelines, fiberoptic lines, transmission lines, railroad landfill, highway expansions, community developments, and commercial development. Worked as a biological monitor on construction sites to insure compliance with federal resource protection mandates on 40 construction projects including Union Pacific RR repair and maintenance (2006, '07), pipeline, transmission and fiberoptic lines, highway improvements and expansions, vehicle test track. Responsibilities included providing environmental education to workers, insuring contractor compliance with federal guidelines, conducting surveys and interpreting activities and impacts to the resource, radio-tracking desert tortoises on and surrounding work sites, and recording and reporting all work related activities, observations, and problems as required per project.



<b>Biological Consultant (cont.)</b>	<p>Completed southwestern willow flycatcher protocol training, St. George, UT. Participated with expert birders on swwf riparian surveys for experience.</p> <p>Monitored construction of AT&amp;T fiberoptic line in Klamath National Forest, CA, for compliance with northwest environmental protection mandates.</p> <p>GIS and Remote Sensing basic training; ARC/INFO digitizing for GeoGraphics, Inc.</p> <p>Species surveys include: raptor nest, bat, and vegetation surveys near Delta, UT; bird, small mammal and fish inventory surveys along riparian habitat of the Virgin River near Mesquite, NV; Forest Service inventory plots in Boise National Forest, ID, for description of tree species and habitat characteristics; relative abundance bird survey transects on cottonwood plantations in eastern WA to identify and compare bird use there with surrounding avifauna; spotted owl surveys following BLM protocol in Klamath National Forest, CA; sage grouse lek surveys in northern CA; and bald eagle wintering habitat surveys in northern UT. Evaluated the legality of an innovative zoning amendment in CO to limit development at high elevation; researched characteristics of high elevation lands.</p> <p>Completed FWS-certified prairie dog colony mapping and black-footed ferret clearance surveys for WYCAL Gas Pipeline in SW Wyoming and for CIG Gas Pipeline in WY, CO and UT; involved extensive nocturnal spotlighting surveys.</p> <p>Telemetry tracked humpback chub on 3 river trips within Grand Canyon National Park; involved motor rafting up and down the Colorado River; set drift nets and fish traps to document native fish populations. On the Yampa River in CO, radio-tracked, electroshocked and pit tagged native fish species; included field surgery operations to implant radio transmitters. Radio tracked chub on Green River, UT; electrofished and netted through Cataract Canyon</p>
<b>Wildlife Field Biologist</b>	<p>Dr. John Weaver, University of Montana; work in Jasper National Park, Alberta, Canada (6/89-9/89). Conducted big game pellet group transects throughout the home range of a wolf pack as part of a timber wolf prey selectivity study in Jasper National Park, Alberta, Canada. Coordinated field logistics; supervised one field assistant.</p>
<b>Wildlife Consultant</b>	<p>Bio/West, Inc., Logan, UT (1/88-1/89). Evaluated the potential impacts of various types of development on wildlife including: FWS-certified prairie dog colony mapping and black-footed ferret searches in WY, CO, and UT; a study of avian behavioral response to and collision rate with a 260 kV transmission line in northwest MT; ski area expansion effects on black bears in VT; and endangered fish species electroshocking, netting and radio tracking studies in the Colorado and Green Rivers. Authored portions of project reports.</p>
<b>Biological Technician</b>	<p>US Fish &amp; Wildlife Service, Alaska Maritime National Wildlife Refuge: Aleutian Islands Unit, Adak, AK (1/87-4/87). Completed secondary phase of arctic fox eradication on Kiska Island implemented for the preservation of the endangered Aleutian Canada goose. Conducted bald eagle and sea lion helicopter surveys on Kiska Island; repeatedly surveyed Adak Island avifauna; collected bald eagle morphometrics on electrocuted birds; analyzed auklet activity patterns using time-lapse photography.</p>

***Summary of Experience***

Mr. Bissonnette has more than 8 years of combined experience in the biological and geotechnical consulting industry. He has led teams in the survey of rare and endangered plants. He has assessed sites for natural resources, and conducted protocol surveys for state and federally listed species. He has conducted wetland delineations, and consulted on Army Corp of Engineers 404 Clean Water permits, both Individual and Nation-Wide. He has applied for and consulted on California Department of Fish and Game Lake and Streambed Alteration Agreements.

Mr. Bissonnette has experience working with Geographic Information Systems (GIS), and has experience using Global Positioning Systems (GPS). He has used GIS on projects to help evaluate potential impacts, research location information, analyze relationships of location resources, and produce products for reports such as maps, charts, and tables.

Mr. Bissonnette's project experience includes federal, state, transportation, residential, commercial, and private projects.

***Education***

Bachelors of Science: Biology with an emphasis in Botany, Humboldt State University, 2003

Minor Degree: Native American Studies, Humboldt State University, 2003

***Registrations / Continuing Education***

Member of the California Native Plant Society (CNPS)

Trained in the Mapping and Identification of California Vegetation, CNPS 2006

Trained in Plant Taxonomy and Identification of Vernal Pool Plant species, 2007

***Registrations / Continuing Education (continued)***

Trained in CNPS / CDFG Protocols for Botanic Surveys, 2007

Trained in the identification of *Eriogonum species*, Jepson Herbarium, 2007

Course work in ESA Regulation and Protection, U.C. Davis Extension, 2007

Trained Wetland Delineator, Wetland Training Institute, 2005

Trained in the Handling of Desert Tortoise, Desert Tortoise Council, 2007

Trained in the identification of “Fairy Shrimp” and “Tadpole shrimp”, 2006

Trained in the identification of California Tiger Salamander and their larvae, 2005

HAZWOPER, 24 and 16 hour training, ABAG (Association of Bay Area Governments),  
2005: 8 hour Refresher Courses in 2006, and 2007.

***Select Project Experience***

The following is a representative selection of Mr. Bissonnette’s project experience.

***Van Tol Dairy Development, Glenn County California - 2007-2008***

Mr. Bissonnette conducted a reconnaissance level habitat assessment of an approximately 315-acre parcel for the development of a dairy facility and supporting agricultural lands. Mr. Bissonnette assessed and / or characterized habitat, vegetation structures, and potential wetlands. Mr. Bissonnette characterized and assessed the project site for natural resources with focus on wildlife presence and identification, identification of observed plants, and habitat suitability for use by state and / or federally listed special status species. Mr. Bissonnette authored the report and managed the project.

***Gross Property Assessment, Johnson Valley, San Bernardino County California – 2007***

Mr. Bissonnette conducted a reconnaissance level habitat assessment and reconnaissance level survey for desert tortoise for an approximately 10-acre parcel in the unincorporated town of Johnson Valley. Mr. Bissonnette characterized and assessed the project site for natural resources with focus on wildlife presence and identification, identification of observed plants. The assessment emphasized habitat suitability for use by state and / or federally listed special status species, specifically desert tortoise. Mr. Bissonnette authored the report and managed the project.

***Hay Ranch-Coso Operating Company, Little Lake (Gill Station), California – 2007***

Mr. Bissonnette helped conduct a wetland delineation of an approximately eight and half mile proposed water pipeline easement. Coso Operating Company proposed to install a linear water pipeline extending from inside the China Lake, Naval Weapons Base east to a site formally known as the Hay Ranch. Mr. Bissonnette helped conduct an assessment of the easement for potential jurisdictional features. The easement was assessed for potential jurisdictional wetland features as defined by the USACE. The easement was secondarily assessed for potential impacts to natural resources. Mr. Bissonnette co-authored authored the wetland assessment report and helped perform consultation with State and Federal agencies.

***Quay Valley Environmental Impact Report, Kings County California – 2007***

Mr. Bissonnette helped to evaluate and author the biological sections of an Environmental Impact Report for the proposed development of an “environmentally green” planned city development project.

***Clovis Avenue and Herndon Avenue Commercial Retail Development Project,  
Clovis, California – 2007***

Mr. Bissonnette conducted mitigated pre-construction surveys for western burrowing owls and conducted consultations with FWS regarding observed vernal pool fairy shrimp. Paytner Realty and Investments, Incorporated were required to provide pre-construction surveys for western burrowing owls as an EIR mitigation requirement prior to ground disturbing activities within the project site boundaries. The project was also required to consult with the FWS regarding fairy shrimp species observed on the project site. Mr. Bissonnette implemented the requested procedures set forth by the FWS and CDFG prior to ground disturbance activities.

***Westside Parkway Freeway Alignment, Bakersfield, California – 2007***

Mr. Bissonnette conducted a reconnaissance level habitat assessment and pre-construction survey for the presence of San Joaquin kit fox at the request of the Bureau of Reclamation. The assessment helped to provide application information for exploratory geo-technical drilling along an irrigation canal embankment within the Bureau of Reclamations jurisdiction. Mr. Bissonnette conducted these surveys to help assess the potential for impacts to kit fox and kit fox habitat. Mr. Bissonnette assessed and / or characterized habitat, vegetation structures, and the potential for kit fox to occur at the site. Mr. Bissonnette also characterized and assessed the project area for natural resources with focus on identification of observed habitat, wildlife presence, and identification, and preliminary assessment of the habitat's suitability for use by state and / or federally listed special status species. Mr. Bissonnette authored the assessment report.

***North Coast Railroad Authority, Northern California – 2007***

Mr. Bissonnette conducted reconnaissance level habitat assessment surveys of the railroad right-a-way easement and adjacent properties for the California Department of

Transportation and the North Coast Railroad Authority. Mr. Bissonnette conducted these surveys to help assess the potential for impacts to the natural resources along the railroad easement between the towns of Cloverdale and Hopland, and between the towns of American Canyon and Novato, and along a section of easement near the town of Calpella, California. Mr. Bissonnette assessed and / or characterized habitat, vegetation structures, and potential wetlands that may be affected by the project. Mr. Bissonnette characterized and assessed the project area for natural resources with focus on identification of observed plants, wildlife presence, and identification, and preliminary assessment of the habitat's suitability for use by state and / or federally listed special status species.

***Red Apple Ranch Development, Calaveras County, California – 2007***

Mr. Bissonnette conducted FWS protocol level day and night surveys for California Red-Legged frog. Mr. Bissonnette performed sight and auditory surveys of red-legged frogs at an approximately 139-acre site located near the town of Murphy's in the county of Calaveras.

***DSL Service Company-Lowe's HIW project, Rancho Cordova, California – 2007***

Mr. Bissonnette assisted DSL Services Company with the remedial assessment of a parcel in the city Rancho Cordova in response to a United States Fish and Wildlife issue and United States Army Corps of Engineers request for assessment of a previously impacted and rough graded site. Mr. Bissonnette conducted a biological assessment and performed a wetland delineation for an approximately 17 acre site where Lowe's Home Improvement Warehouse was in the processes of developing a new retail warehouse and supporting infrastructure. Mr. Bissonnette assessed and / or characterized habitat, vegetation structures, and potential wetlands within the site. Mr. Bissonnette characterized and assessed the project site for natural resources with focus on wildlife presence and identification, identification of observed plants, and assessing

the habitat's suitability for use by state and / or federally listed special status species. Mr. Bissonnette also helped to conduct a wetland delineation of the site to assess for potential jurisdictional wetland features as defined by the USACE. Mr. Bissonnette has authored the assessment report and helped perform consultation with State and Federal agencies on behalf of the client.

***Costco Retail Warehouse, California – 2007***

Mr. Bissonnette has performed habitat risk assessments, pre-construction raptor and migratory bird surveys, and wetland assessments for sites in Manteca, Chico, and Visalia California. Mr. Bissonnette characterized and assessed the project sites for natural resources with focus on wildlife presence and identification, identification of observed plants, and assessing the habitat's suitability for use by state and / or federally listed special status species. Mr. Bissonnette also assessed the site for wetlands and or indications of wetlands as defined by the Army Corps of Engineers. Mr. Bissonnette authored the assessment reports.

***Department of General Services – Sierra Conservation Center, Jamestown, California – 2007***

Mr. Bissonnette consulted on biological and botanical resources for the replacement of a water line for the California Department of Corrections inmate facility located in Jamestown. Mr. Bissonnette conducted field assessments and reported on potential impacts to resources with respect to state and federal regulations. Mr. Bissonnette has authored the assessment report and helped to perform consultation with state and federal agencies on behalf of the client.

***JCPenney's Incorporated, Manteca, California – 2007***

Mr. Bissonnette conducted biological and wetland assessments for the JCPenney's corporation. Mr. Bissonnette conducted reconnaissance surveys to assess potential



## *Alphabiota Environmental Consulting, LLC*

Yancey Bissonnette

Summary of Experience

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impacts to the natural resources on a proposed development site. Mr. Bissonnette assessed and / or characterized habitat, vegetation structures, and potential wetlands within the site. Mr. Bissonnette characterized and assessed the project site for natural resources with focus on wildlife presence and identification, identification of observed plants, and assessing the habitat's suitability for use by state and / or federally listed special status species. Mr. Bissonnette also assessed the site for wetlands and or indications of wetlands as defined by the Army Corps of Engineers. Mr. Bissonnette authored the assessment report and performed consultation with State and Federal agencies on behalf of the client.

### ***Darco Group - Avenue 12 Housing Development, Madera, California - 2006.***

Mr. Bissonnette assisted the Darco Group, Inc. in the assessment of approximately 210-acres for a proposed high-density housing development project in the city of Madera, California. Mr. Bissonnette conducted a biological assessment of the proposed project site. Mr. Bissonnette assessed and characterized habitat, vegetation structures, and potential wetlands within the site. Mr. Bissonnette characterized and assessed the project site for natural resources with focus on wildlife presence and identification, identification of observed plants, and assessing the habitat's suitability for use by state and / or federally listed special status species. Mr. Bissonnette has authored the assessment report and is currently helping to perform consultation with State and Federal agencies on behalf of the client.

### ***Department of Fish and Game, California - 2006***

Mr. Bissonnette conducted biological and environmental assessments of two separate communications towers and equipment vault locations near the towns of Oakhurst and Columbia in the western Sierra Nevada mountains. Mr. Bissonnette assessed approximately 40-acres, of remote ridge top land at each location, for the presence of natural resources, wildlife, vegetation, and habitat suitability for use by state and / or

federally listed special status species. Mr. Bissonnette also assessed existing communications equipment vaults for potential environmental concerns that may exist or may occur during the demolition or remodel of existing facilities or which may occur during the construction of new facilities. Mr. Bissonnette helped to author individual sections of a site assessment questionnaire used by the Department of General Services to evaluate State funded projects.

***Rockville Hills Park, Fairfield, California - 2006***

Mr. Bissonnette conducted a secondary biological reconnaissance assessment of approximately three acres of the northwest portion of the Rockville Hills regional park, where a proposed redevelopment of an existing parking facility is located. Mr. Bissonnette visited the site to assess the reported vegetation classifications and structures, and also to assess the reported habitat types and conduct a reconnaissance level investigation for natural resources in the reported habitat types. These investigations focused on wildlife presence, identification of plants observed, and assessing the habitat's suitability for use by listed species. Mr. Bissonnette helped in the identification of on site wetlands as outlined by the U.S. Army Corps of Engineers 1987 wetlands manual.

***Parriera Dairy project, Hanford, California - 2006***

Mr. Bissonnette authored the report for this project. Mr. Bissonnette reviewed and analyzed field data collected by another biologist who conducted a biological assessment of an approximately 120-acre dairy facility and supporting agricultural lands. Mr. Bissonnette assessed reported characterized habitat, vegetation structures, and potential wetlands. Mr. Bissonnette authored the report and managed the report production under the supervision of a senior project manager.

***Mattos and Sons Dairy project, Hanford, California - 2006***

Mr. Bissonnette conducted a biological assessment of an approximately 800-acre dairy facility and supporting agricultural lands. Mr. Bissonnette assessed and / or characterized habitat, vegetation structures, and potential wetlands. Mr. Bissonnette characterized and assessed the project site for natural resources with focus on wildlife presence and identification, identification of observed plants, and assessing the habitat's suitability for use by state and / or federally listed special status species. Mr. Bissonnette authored the report and managed the project.

***Mattos Brothers Dairy project, Hanford, California - 2006***

Mr. Bissonnette conducted a biological assessment of an approximately 900-acre dairy facility and supporting agricultural lands. Mr. Bissonnette assessed and / or characterized habitat, vegetation structures, and potential wetlands. Mr. Bissonnette characterized and assessed the project site for natural resources with focus on wildlife presence and identification, identification of observed plants, and assessing the habitat's suitability for use by state and / or federally listed special status species. Mr. Bissonnette authored the report and managed the project.

***Four-Star Dairy project, Hanford, California - 2006***

Mr. Bissonnette along with one other biologist conducted a biological assessment of an approximately 720-acre dairy facility and supporting agricultural lands. Mr. Bissonnette assessed and / or characterized habitat, vegetation structures, and potential wetlands. Mr. Bissonnette characterized and assessed the project site for natural resources with focus on wildlife presence and identification, identification of observed plants, and assessing the habitat's suitability for use by state and / or federally listed special status species. Mr. Bissonnette authored the report and managed the project.

***Ferguson project, Rough and Ready Island, Port of Stockton, California - 2006***

Mr. Bissonnette conducted a biological assessment and wetland delineation to be used in the planning and permitting process for the development of an approximately 100 acre site. Mr. Bissonnette characterized the site's habitat and conducted a reconnaissance level investigation for natural resources. These investigations focused on observable wildlife presence, identification of observed plants, and assessing the habitat's suitability for use by state and / or federally listed species. Mr. Bissonnette helped in the identification and delineation of on site wetlands as outlined by the U.S. Army Corps of Engineers 1987 wetlands manual.

***Terminal Project, North Edwards, California - 2006***

Mr. Bissonnette conducted a biological assessment to be used in the planning and permitting process for a unique project combining art and natural history with the burial of the fuselage of a jet airplane. The project site consisted of an approximately 10-acre parcel of desert land. Mr. Bissonnette analyzed the site by dividing it into habitat types and conducting a reconnaissance level investigation for natural resources in each habitat type. These investigations focused on wildlife presence, identification of plants observed, and assessing the habitat's suitability for use by listed species.

Mr. Bissonnette conducted a protocol survey for desert tortoise (*Gopherus agassizii*), as well as a preliminary survey for the threatened species of the Mojave ground squirrel (*Spermophilus mohavensis*). A number of desert tortoises were observed, which included both genders and juvenile tortoises. Mr. Bissonnette authored the report and managed the project.

***Preservation Ranch, Sonoma County, California – 2005-2006-2007***

Mr. Bissonnette has assisted PPV LLC, in the assessment, permitting, and development of an exceptionally comprehensive project that involves environmental services related to an approximately 22,000-acre site for the proposed development of vineyards,

## *Alphabiota Environmental Consulting, LLC*

Yancey Bissonnette

Summary of Experience

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conservation lands, timber production, housing, and parcel re-development. The project is comprised of 18 tasks. The services Mr. Bissonnette was involved with include, but are not limited to, regulatory agency interaction, biological support services, biological monitoring, biological assessments, biological surveys, and on-site watershed, stream and wetlands assessments with water quality monitoring.

Mr. Bissonnette led tasks in the evaluation of botanical species as they relate to federal and state regulations. Mr. Bissonnette managed small teams in the gathering, review, and presentation of data of the botanical species within the site.

Mr. Bissonnette participated in the biological assessment of proposed vineyard sites, for the development of a site EIR document. As part of the biological assessments he led field teams in the observations of biologically significant resources, use of GPS, and collection of field data. Mr. Bissonnette participated in the task of the evaluation of road-stream crossings as their relevance pertains to the California Department of Fish and Game Code 1602 and section 404 of the Clean Water Act. Mr. Bissonnette helped to develop the survey protocols and forms to capture and represent conditions at each crossing for a Streambed Alteration Agreement and agency review. He has coordinated a small team in the gathering, review, and presentation of data for the first two phases of the project, consisting of approximately 300 crossings. He coordinated these efforts with the California Department of Fish and Game. He used GPS mapping and GIS analysis in support of data that will be implemented in permitting agreements. He also assisted in the preparation of the 404 individual permit applications, and coordination with USACE.

### ***Armona sub-division Development, Kings County, California – 2006.***

Mr. Bissonnette expedited biological services for Mr. Jerry Irons and Mr. Barry Notolli for the proposed sub-division and development of an approximately 40-acre parcel in the city of Armona, California. Mr. Bissonnette conducted an integrated protocol survey

methodologies for raptors at the project site and within a half mile radius of the site.

Mr. Bissonnette authored the report and managed the project.

***Red Apple Ranch Development, Calaveras County, California – 2005-2006.***

Mr. Bissonnette assisted in a secondary evaluation of wetland features of a 139-acre site in the Sierra foothills, using GPS mapping and GIS to integrate delineation data with construction plans. Mr. Bissonnette conducted field evaluations of natural resources on the site. He prepared permits for Clean Water Act Sections 401 and 404, as well as California Department of Fish and Game Code 1602. Mr. Bissonnette evaluated the project's impacts for use within a Nation Wide Permit (NWP 39).

***Sommerfeld Ranch, Stanislaus County, California – 2005.***

Mr. Bissonnette expedited biological services for Frances Sommerfeld in the subdivision of an existing approximately 130-acre parcel of organic agricultural land. Mr. Bissonnette conducted a biological assessment of the site. He conducted a general botanical survey, and authored the report. He also conducted a general avian survey and an initial assessment for California tiger salamanders (*Ambystoma californiense*).

***Vista Plaza Development, Valley Springs, California - 2005.***

Mr. Bissonnette assisted in conducting a wetland delineation and permitting review of the Clean Water Act Sections 401 and 404, as well as California Department of Fish and Game Code 1602. He integrated GPS mapping and GIS to help evaluate delineation data.

***Geotechnical experience – 1989-1992; 2003-2005.***

Mr. Bissonnette has previous experience with materials testing, and on site field management of mass and minor grading projects. He has managed and consulted on road construction, home development, and commercial development projects, and has developed extensive client relations experience.

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MAY 22 2007

Do not abbreviate

## Data Sheet for Live Desert Tortoises

Write on this side only

Located by HOISINGTON / WARTIAN  
 Processed by \_\_\_\_\_  
 Study site name \_\_\_\_\_

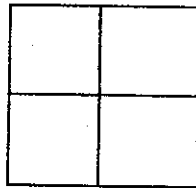
Township \_\_\_\_\_ Range \_\_\_\_\_  
 Section \_\_\_\_\_ Quadrat \_\_\_\_\_

Coordinates (Reference SW corner)  
 \_\_\_\_\_ meters North \_\_\_\_\_ meters East

UTM's 38S 4488 n 0563600 e  
 Elevation 2287 ft Accuracy  $\pm$  6 m

County \_\_\_\_\_ State \_\_\_\_\_

☐ On Plot ☐ Off Plot



Show location of  
tortoise in quadrat

Tortoise ID # \_\_\_\_\_  
 Year first marked \_\_\_\_\_  
 Verification of ID ☐  
 Capture type \_\_\_\_\_ Sex \_\_\_\_\_  
 Date (dd/mm/yy) MAY 22 2007  
 Time (PST): Start 1215 End \_\_\_\_\_  
 Frequency \_\_\_\_\_ Transmitter # \_\_\_\_\_  
 Transmitter type \_\_\_\_\_  
 Transmitter attached \_\_\_\_\_  
 Transmitter to be replaced on \_\_\_\_\_  
 PIT # \_\_\_\_\_

## Tortoise Location

Cover site type: ☒ burrow ☐ pallet ☐ shrub ☐ caliche cave ☐ rock shelter

At cover site: ☐ entering ☐ exiting ☐ on mound ☒ inside

Not at cover site: ☐ in open ☐ other

## Tortoise Activity

☒ resting ☐ basking ☐ walking ☐ feeding  
☐ Interacting with other tortoise  
☐ Interacting with other animals

Describe interaction:

## Burrow Data

ID # \_\_\_\_\_  
 Orientation \_\_\_\_\_  
 Length \_\_\_\_\_ Height \_\_\_\_\_  
 Width \_\_\_\_\_ Soil cover \_\_\_\_\_  
 Location \_\_\_\_\_

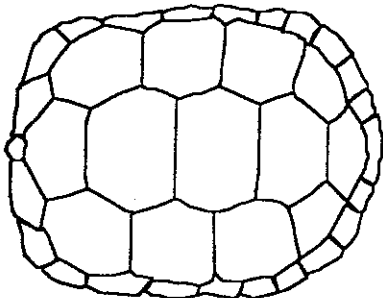
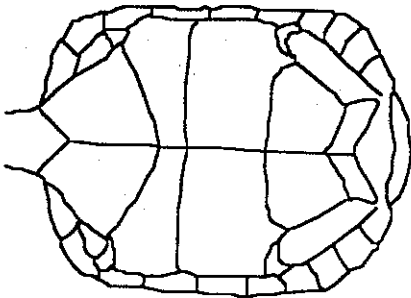
## Survey Type

☐ Radio track  
☐ Burrow search  
☐ Coverage 1  
☐ Coverage 2  
☐ Incidental  
☐ Other

Plants/items eaten (specific):

Color (shell & skin) HV Hue Value Chroma Color

V1 (center)  
 V4 (center)  
 LC1,2&V2 (seam)  
 LM5,6 & LC2 (seam)  
 Foreleg  
 Hindleg

Are you color blind? ☐ Yes ☐ No

Type of blindness \_\_\_\_\_

## Body Measurements

MCL (mm) \_\_\_\_\_  
 PLN (mm) \_\_\_\_\_  
 Weight (g) \_\_\_\_\_  
 Void (g) \_\_\_\_\_  
 Total wt (g) \_\_\_\_\_  
 New growth  
☐ present ☐ absent  
 Epoxy #  
☐ present ☐ legible

## Behavior

## Other notes

TORTOISE INSIDE BURROW, UNDER CREOSOTE  
 NEXT TO ROAD/WASH ON SMALL BANK  
 W/ FAIR AMOUNT OF COBBLE. BRAIDED  
 WASH AREA ON ALLUVIAL FAN

Photos: roll \_\_\_\_\_ frames \_\_\_\_\_

Draw locations of notches (old and new), chips, and anomalies, etc.  
 Describe anomalies in numbering of marginals and any identification problems.

Entered by \_\_\_\_\_ date \_\_\_\_\_ on computer \_\_\_\_\_

Modified by \_\_\_\_\_ on \_\_\_\_\_

Do not abbreviate

## Data Sheet for Live Desert Tortoises

Write on this side only

Located by Wayne Vogler, Kelly Sleeth

Processed by \_\_\_\_\_

Study site name Solar 1Township Solar 1 Aerial map 2 Range \_\_\_\_\_

Section \_\_\_\_\_ Quadrat \_\_\_\_\_

Coordinates (Reference SW corner)

\_\_\_\_\_ meters North \_\_\_\_\_ meters East

UTM's 0548523 n 3855926 e USElevation 1987 ft Accuracy  $\pm$  \_\_\_\_\_ m

County \_\_\_\_\_ State \_\_\_\_\_

☐ On Plot ☐ Off Plot

Tortoise ID # \_\_\_\_\_

Year first marked \_\_\_\_\_

Verification of ID ☐

Capture type \_\_\_\_\_

Sex \_\_\_\_\_

Date (dd/mm/yy) \_\_\_\_\_

Time (PST): Start \_\_\_\_\_

End \_\_\_\_\_

Frequency \_\_\_\_\_

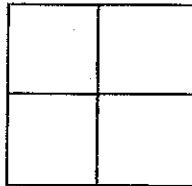
Transmitter # \_\_\_\_\_

Transmitter type \_\_\_\_\_

Transmitter attached \_\_\_\_\_

Transmitter to be replaced on \_\_\_\_\_

PIT # \_\_\_\_\_



Show location of tortoise in quadrat

## Tortoise Location

Cover site type: At cover site: Not at cover site:

- ☐ burrow  
☐ pallet  
☒ shrub  
☐ caliche cave  
☐ rock shelter
- ☒ entering  
☐ exiting  
☐ on mound  
☐ inside
- ☐ in open  
☒ other

resting under  
shrub &  
annual grasses

## Burrow Data

ID # \_\_\_\_\_

Orientation \_\_\_\_\_

Length \_\_\_\_\_ Height \_\_\_\_\_

Width \_\_\_\_\_ Soil cover \_\_\_\_\_

Location \_\_\_\_\_

## Survey Type

- ☐ Radio track  
☐ Burrow search  
☐ Coverage 1  
☐ Coverage 2  
☒ Incidental  
☐ Other

## Tortoise Activity

- ☒ resting  
☐ basking  
☐ walking  
☐ feeding
- ☐ Interacting with other tortoise  
☐ Interacting with other animals
- Describe interaction: \_\_\_\_\_

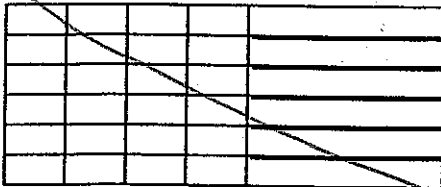
ID &amp; sex of other tortoise \_\_\_\_\_

Species \_\_\_\_\_

Plants/items eaten (specific):

Color (shell &amp; skin) HV Hue Value Chroma Color

V1 (center)  
 V4 (center)  
 LC1,2&V2 (seam)  
 LM5,6 & LC2 (seam)  
 Foreleg  
 Hindleg

Are you color blind? ☐ Yes ☒ No

Type of blindness \_\_\_\_\_

## Body Measurements

MCL (mm) 10 in 254PLN (mm) 145

Weight (g) \_\_\_\_\_

Void (g) \_\_\_\_\_

Total wt (g) \_\_\_\_\_

New growth

☐ present ☐ absent

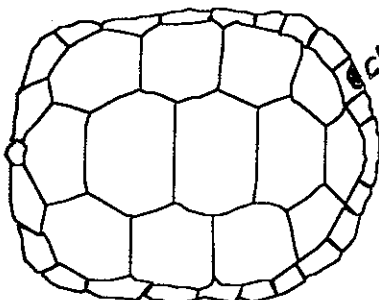
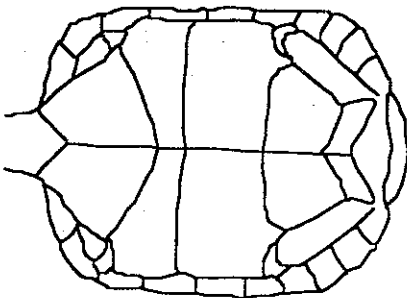
Epoxy #

☐ present ☐ legible

Other notes

## Behavior

resting, limbs  
drawn up, fresh  
scrapings/burrowing  
around individual



Photos: roll \_\_\_\_\_ frames \_\_\_\_\_

Draw locations of notches (old and new), chips, and anomalies, etc.

Describe anomalies in numbering of marginals and any identification problems.

Entered by \_\_\_\_\_ date \_\_\_\_\_ on computer \_\_\_\_\_

Modified by \_\_\_\_\_ on \_\_\_\_\_

© Berry 1997

Do not abbreviate

# Data Sheet for Live Desert Tortoises

Write on this side only

Located by G. HOLKINGTON - C. Solazano  
Processed by G. HOLKINGTON  
Study site name SOLAR I ARRAY SITE

Township \_\_\_\_\_ Range \_\_\_\_\_  
Section \_\_\_\_\_ Quadrat \_\_\_\_\_

Coordinates (Reference SW corner)  
\_\_\_\_\_ meters North \_\_\_\_\_ meters East

UTM's 0551339 n 3053495 e  
Elevation ~ 2100 ft Accuracy  $\pm$  15 ft

County SAN BERNARDINO State CA

☐ On Plot ☐ Off Plot



Show location of  
tortoise in quadrat

Tortoise ID # \_\_\_\_\_  
Year first marked \_\_\_\_\_  
Verification of ID ☐  
Capture type \_\_\_\_\_ Sex UNKNOWN  
Date (dd/mm/yy) 13 APRIL 2007  
Time (PST): Start 0840 End \_\_\_\_\_  
Frequency \_\_\_\_\_ Transmitter # \_\_\_\_\_  
Transmitter type \_\_\_\_\_  
Transmitter attached \_\_\_\_\_  
Transmitter to be replaced on \_\_\_\_\_  
PIT # \_\_\_\_\_

## Tortoise Location

Cover site type: ☐ burrow ☐ pallet ☒ shrub ☐ caliche cave ☐ rock shelter  
At cover site: ☐ entering ☐ exiting ☐ on mound ☐ inside  
Not at cover site: ☒ in open ☐ other

## Burrow Data

ID # \_\_\_\_\_  
Orientation \_\_\_\_\_  
Length \_\_\_\_\_ Height \_\_\_\_\_  
Width \_\_\_\_\_ Soil cover \_\_\_\_\_  
Location \_\_\_\_\_

## Survey Type

☐ Radio track  
☐ Burrow search  
☐ Coverage 1  
☐ Coverage 2  
☐ Incidental  
☐ Other

## Tortoise Activity

☒ resting ☐ basking ☐ walking ☐ feeding  
☐ Interacting with other tortoise  
☐ Interacting with other animals  
Describe interaction: \_\_\_\_\_

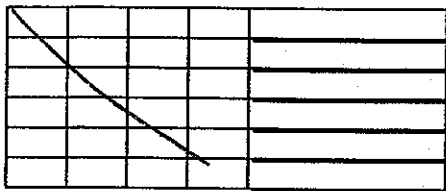
ID & sex of other tortoise \_\_\_\_\_  
Species \_\_\_\_\_

Plants/items eaten (specific):

NOT FORAGING

Color (shell & skin) HV Hue Value Chroma Color

V1 (center)  
V4 (center)  
LC1,2&V2 (seam)  
LM5,6 & LC2 (seam)  
Foreleg  
Hindleg



Are you color blind? ☐ Yes ☒ No

Type of blindness \_\_\_\_\_

## Body Measurements

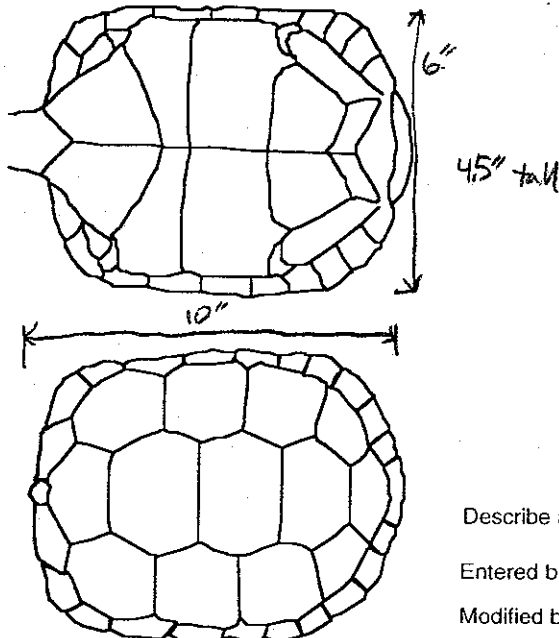
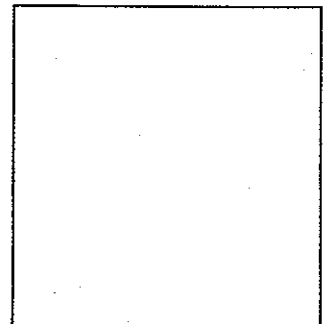
MCL (mm) 10"  
PLN (mm) \_\_\_\_\_  
Weight (g) \_\_\_\_\_  
Void (g) \_\_\_\_\_  
Total wt (g) \_\_\_\_\_

New growth  
☐ present ☐ absent  
Epoxy #  
☐ present ☐ legible

## Other notes

TORTOISE LOCATED UNDER CREOSOTE BUSH NEAR  
ACTIVE BURROW SITE

## Behavior



Photos; roll \_\_\_\_\_ frames \_\_\_\_\_

Draw locations of notches (old and new), chips, and anomalies, etc.

Describe anomalies in numbering of marginals and any identification problems.

Entered by \_\_\_\_\_ date \_\_\_\_\_ on computer \_\_\_\_\_

Modified by \_\_\_\_\_ on \_\_\_\_\_

Do not abbreviate

## Data Sheet for Live Desert Tortoises

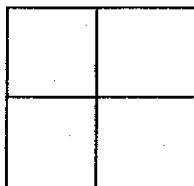
Write on this side only

Located by MICHAEL HUNER / BRIDGET CANTY  
 Processed by M.H.  
 Study site name SOLAR ONE - CODY MOUNTAINS

Township \_\_\_\_\_ Range \_\_\_\_\_  
 Section \_\_\_\_\_ Quadrat \_\_\_\_\_

Coordinates (Reference SW corner)

\_\_\_\_\_ meters North \_\_\_\_\_ meters East

UTM's 3854999 n 0550394 eElevation 700 m Accuracy  $\pm$  \_\_\_\_\_ mCounty San Bernardino State CA
☐ On Plot ☐ Off Plot


Show location of tortoise in quadrat

Tortoise ID # \_\_\_\_\_  
 Year first marked \_\_\_\_\_  
 Verification of ID ☐  
 Capture type \_\_\_\_\_ Sex ♂  
 Date (dd/mm/yy) 13/04/07  
 Time (PST): Start 9:30am End \_\_\_\_\_  
 Frequency \_\_\_\_\_ Transmitter # \_\_\_\_\_  
 Transmitter type \_\_\_\_\_  
 Transmitter attached \_\_\_\_\_  
 Transmitter to be replaced on \_\_\_\_\_  
 PIT # \_\_\_\_\_

## Tortoise Location

Cover site type: At cover site: Not at cover site:

- ☒ burrow ☐ entering ☐ in open  
☐ pallet ☐ exiting ☐ other  
☐ shrub ☐ on mound  
☐ caliche cave ☒ inside  
☐ rock shelter



## Burrow Data

ID # \_\_\_\_\_  
 Orientation \_\_\_\_\_  
 Length 3' Height 5"  
 Width 12" Soil cover sand/water  
 Location open flat by road

## Survey Type

- ☐ Radio track  
☐ Burrow search  
☐ Coverage 1  
☐ Coverage 2  
☒ Incidental  
☐ Other

## Tortoise Activity

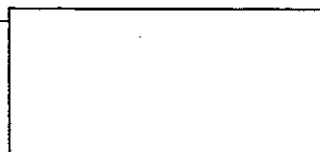
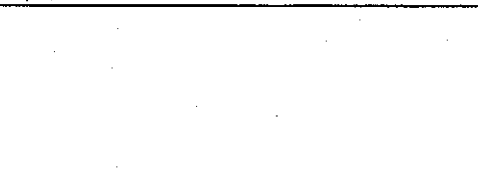
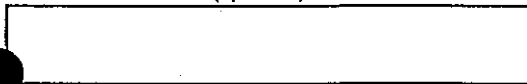
- ☒ resting ☐ Interacting with other tortoise  
☐ basking ☐ Interacting with other animals  
☐ walking  
☐ feeding

Describe interaction:

ID &amp; sex of other tortoise \_\_\_\_\_

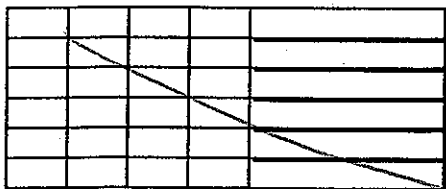
Species \_\_\_\_\_

Plants/items eaten (specific):



Color (shell &amp; skin) HV Hue Value Chroma Color

V1 (center)  
 V4 (center)  
 LC1,2&V2 (seam)  
 LM5,6 & LC2 (seam)  
 Foreleg  
 Hindleg

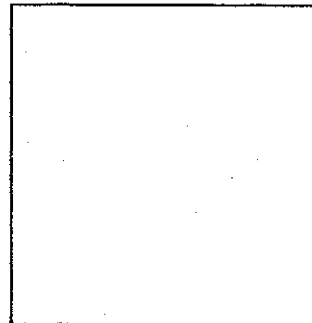
Are you color blind? ☐ Yes ☒ No

Type of blindness \_\_\_\_\_

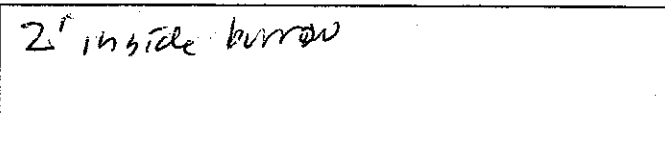
## Body Measurements

MCL (mm) \_\_\_\_\_  
 PLN (mm) \_\_\_\_\_  
 Weight (g) \_\_\_\_\_  
 Void (g) \_\_\_\_\_  
 Total wt (g) \_\_\_\_\_  
 New growth  
☐ present ☐ absent  
 Epoxy #  
☐ present ☐ legible

## Behavior



## Other notes



Photos; roll \_\_\_\_\_ frames \_\_\_\_\_

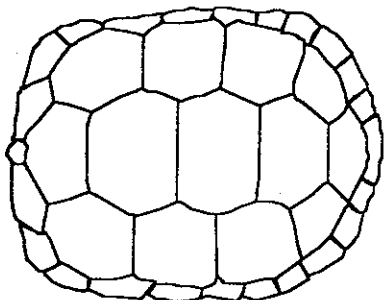
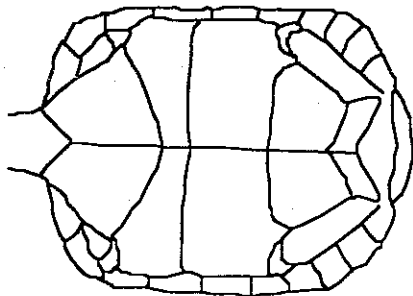
Draw locations of notches (old and new), chips, and anomalies, etc.

Describe anomalies in numbering of marginals and any identification problems.

Entered by \_\_\_\_\_ date \_\_\_\_\_ on computer \_\_\_\_\_

Modified by \_\_\_\_\_ on \_\_\_\_\_

© Berry 1997







30 MAY 2007

Do not abbreviate

## Data Sheet for Live Desert Tortoises

Write on this side only

Located by M. HONER  
 Processed by \_\_\_\_\_  
 Study site name \_\_\_\_\_

Township \_\_\_\_\_ Range \_\_\_\_\_  
 Section \_\_\_\_\_ Quadrat \_\_\_\_\_

Coordinates (Reference SW corner)  
 \_\_\_\_\_ meters North \_\_\_\_\_ meters East

UTM's 3852357 n 6546149 e  
 Elevation 1366 ft Accuracy  $\pm$  \_\_\_\_\_ m

County \_\_\_\_\_ State \_\_\_\_\_

☐ On Plot ☐ Off Plot

Tortoise ID # \_\_\_\_\_

Year first marked \_\_\_\_\_

Verification of ID ☐

Capture type \_\_\_\_\_

Sex \_\_\_\_\_

Date (dd/mm/yy) 30 MAY 2007Time (PST): Start 1615

End \_\_\_\_\_

Frequency \_\_\_\_\_

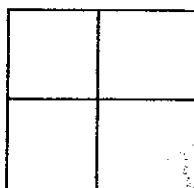
Transmitter # \_\_\_\_\_

Transmitter type \_\_\_\_\_

Transmitter attached \_\_\_\_\_

Transmitter to be replaced on \_\_\_\_\_

PIT # \_\_\_\_\_



Show location of  
tortoise in quadrat

## Tortoise Location

Cover site type: ☒ At cover site: ☐ Not at cover site: ☐

- ☒ burrow  
☐ pallet  
☐ shrub  
☐ caliche cave  
☐ rock shelter
- ☐ entering  
☐ exiting  
☐ on mound  
☒ inside
- ☐ in open  
☐ other

## Tortoise Activity

- ☒ resting  
☐ basking  
☐ walking  
☐ feeding
- ☐ Interacting with other tortoise  
☐ Interacting with other animals
- Describe interaction: \_\_\_\_\_

Plants/items eaten (specific):  
 \_\_\_\_\_

## Burrow Data

ID # \_\_\_\_\_

Orientation \_\_\_\_\_

Length \_\_\_\_\_ Height \_\_\_\_\_

Width \_\_\_\_\_ Soil cover \_\_\_\_\_

Location \_\_\_\_\_

ID &amp; sex of other tortoise \_\_\_\_\_

Species \_\_\_\_\_

FRESH TRACKS IN SAND OUTSIDE  
BURROW

## Survey Type

- ☐ Radio track  
☐ Burrow search  
☐ Coverage 1  
☐ Coverage 2  
☐ Incidental  
☐ Other

Color (shell & skin) HV Hue Value Chroma Color

V1 (center)  
 V4 (center)  
 LC1,2&V2 (seam)  
 LM5,6 & LC2 (seam)  
 Foreleg  
 Hindleg


Are you color blind? ☐ Yes ☐ No

Type of blindness \_\_\_\_\_

## Body Measurements

MCL (mm) \_\_\_\_\_

PLN (mm) \_\_\_\_\_

Weight (g) \_\_\_\_\_

Void (g) \_\_\_\_\_

Total wt (g) \_\_\_\_\_

New growth

☐ present ☐ absent

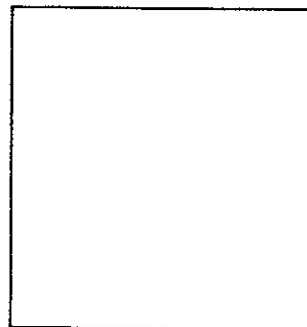
Epoxy #

☐ present ☐ legible

## Other notes

WITHIN LARGE SANDY WASH AREA/CANYON  
 AMONG STEEP, ROCKY TERRAIN. NEAR  
 RXR TRACKS AND MINE AREA

## Behavior



Photos; roll \_\_\_\_\_ frames \_\_\_\_\_

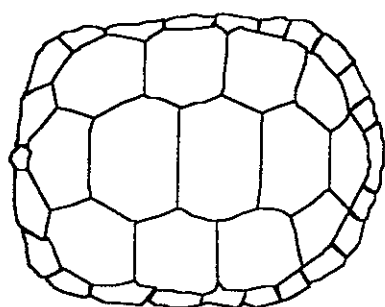
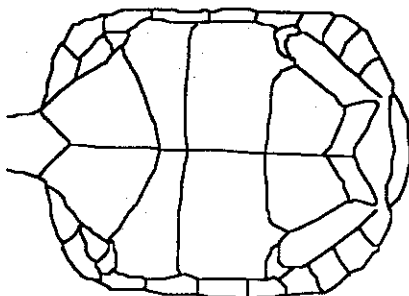
Draw locations of notches (old and new), chips, and anomalies, etc.

Describe anomalies in numbering of marginals and any identification problems.

Entered by \_\_\_\_\_ date \_\_\_\_\_ on computer \_\_\_\_\_

Modified by \_\_\_\_\_ on \_\_\_\_\_

© Berry 1997



22 MAY 2007

Do not abbreviate

## Data Sheet for Live Desert Tortoises

Write on this side only

Located by M. WARTIAN / G. HOLSTON

Processed by \_\_\_\_\_

Study site name \_\_\_\_\_

Township \_\_\_\_\_ Range \_\_\_\_\_

Section \_\_\_\_\_ Quadrat \_\_\_\_\_

Coordinates (Reference SW corner)

\_\_\_\_\_ meters North \_\_\_\_\_ meters East

UTM's 3854940 n 0554645 eElevation 2423 ft Accuracy  $\pm$  6 m

County \_\_\_\_\_ State \_\_\_\_\_

☐ On Plot ☐ Off Plot

Tortoise ID # \_\_\_\_\_

Year first marked \_\_\_\_\_

Verification of ID ☐

Capture type \_\_\_\_\_

Sex \_\_\_\_\_

Date (dd/mm/yy) 22 MAY 2007Time (PST): Start 1413

End \_\_\_\_\_

Frequency \_\_\_\_\_

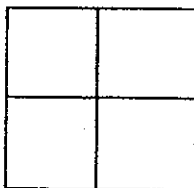
Transmitter # \_\_\_\_\_

Transmitter type \_\_\_\_\_

Transmitter attached \_\_\_\_\_

Transmitter to be replaced on \_\_\_\_\_

PIT # \_\_\_\_\_



Show location of tortoise in quadrat

## Tortoise Location

Cover site type:

At cover site:

Not at cover site:

☒ burrow☐ pallet☐ shrub☐ caliche cave☐ rock shelter☐ entering☐ exiting☐ on mound☒ inside☐ in open☐ other

## Tortoise Activity

☒ resting☐ basking☐ walking☐ feeding☐ Interacting with other tortoise☐ Interacting with other animals

Describe interaction:

## Burrow Data

ID # \_\_\_\_\_

Orientation \_\_\_\_\_

Length \_\_\_\_\_

Width \_\_\_\_\_

Location \_\_\_\_\_

Height \_\_\_\_\_

Soil cover \_\_\_\_\_

## Survey Type

☐ Radio track☐ Burrow search☐ Coverage 1☐ Coverage 2☐ Incidental☐ Other

Plants/items eaten (specific):

Color (shell &amp; skin)

HV

Hue

Value

Chroma

Color

V1 (center)

V4 (center)

LC1,2&amp;V2 (seam)

LM5,6 &amp; LC2 (seam)

Foreleg

Hindleg


Are you color blind? ☐ Yes ☐ No

Type of blindness \_\_\_\_\_

## Body Measurements

MCL (mm) \_\_\_\_\_

PLN (mm) \_\_\_\_\_

Weight (g) \_\_\_\_\_

Void (g) \_\_\_\_\_

Total wt (g) \_\_\_\_\_

New growth

☐ present ☐ absent

Epoxy #

☐ present ☐ legible

## Behavior

## Other notes

IN BURROW ON BANK OF BRAIDED WASH LEADING TO A LARGE WASH FEATURE, W-FACING SLOPE WITH SUBSTANTIAL TOPOGRAPHY SURROUNDING THE SITE.

Photos; roll \_\_\_\_\_ frames \_\_\_\_\_

Draw locations of notches (old and new), chips, and anomalies, etc.

Describe anomalies in numbering of marginals and any identification problems.

Entered by \_\_\_\_\_ date \_\_\_\_\_ on computer \_\_\_\_\_

Modified by \_\_\_\_\_ on \_\_\_\_\_

© Berry 1997

Do not abbreviate

## Data Sheet for Live Desert Tortoises

Write on this side only

Located by G. HOISINGTON / J. LOVEProcessed by G. HOISINGTONStudy site name SOLAR I ARRAY SITETownship AERIAL MAP # 8/GPS POINTSection #69 Quadrat

Coordinates (Reference SW corner)

\_\_\_\_\_ meters North \_\_\_\_\_ meters East

UTM's 0557545 n 3853108 eElevation ~ 2500 ft Accuracy  $\pm$  15 ftCounty SAN BERNARDINO State CA☐ On Plot ☐ Off Plot

Tortoise ID # \_\_\_\_\_

Year first marked \_\_\_\_\_

Verification of ID ☐

Capture type \_\_\_\_\_

Sex MDate (dd/mm/yy) 10 APR 2007

Time (PST): Start \_\_\_\_\_

End \_\_\_\_\_

Frequency \_\_\_\_\_

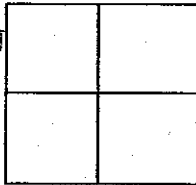
Transmitter # \_\_\_\_\_

Transmitter type N/A

Transmitter attached \_\_\_\_\_

Transmitter to be replaced on \_\_\_\_\_

PIT # \_\_\_\_\_

Show location of  
tortoise in quadrat

## Tortoise Location

Cover site type: ☐ burrow ☐ pallet ☒ shrub ☐ caliche cave ☐ rock shelterAt cover site: ☐ entering ☐ exiting ☐ on mound ☐ insideNot at cover site: ☐ in open ☐ other

## Tortoise Activity

☒ resting ☐ basking ☐ walking ☐ feeding☐ Interacting with other tortoise☐ Interacting with other animals

Describe interaction:

Plants/items eaten (specific):

NO FORAGING ACTIVITY OBSERVED

## Burrow Data

ID # NO BURROW

Orientation \_\_\_\_\_

Length \_\_\_\_\_

Width \_\_\_\_\_

Location \_\_\_\_\_

Height \_\_\_\_\_

Soil cover \_\_\_\_\_

## Survey Type

☐ Radio track  
☒ Burrow search  
☐ Coverage 1  
☐ Coverage 2  
☐ Incidental  
☐ Other

ID &amp; sex of other tortoise \_\_\_\_\_

Species \_\_\_\_\_

Describe interaction:

TORTOISE RESTING IN SHADE OFOPUNTIA RAMOSISSIMA

Color (shell &amp; skin) HV Hue Value Chroma Color

V1 (center)

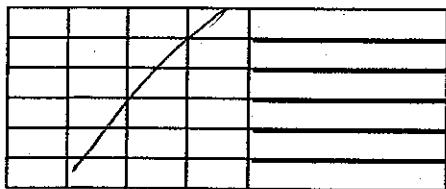
V4 (center)

LC1,2&amp;V2 (seam)

LM5,6 &amp; LC2 (seam)

Foreleg

Hindleg

Are you color blind? ☐ Yes ☒ No

Type of blindness \_\_\_\_\_

## Body Measurements

MCL (mm) 11.5 in

PLN (mm) \_\_\_\_\_

Weight (g) \_\_\_\_\_

Void (g) \_\_\_\_\_

Total wt (g) \_\_\_\_\_

New growth

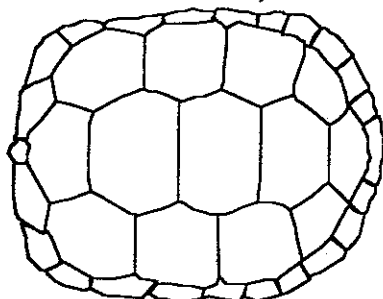
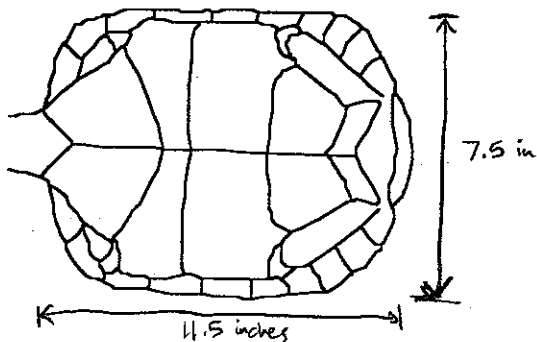
☐ present ☐ absent

Epoxy #

☐ present ☐ legible

## Other notes

## Behavior



Photos: roll \_\_\_\_\_ frames \_\_\_\_\_

Draw locations of notches (old and new), chips, and anomalies, etc.

Describe anomalies in numbering of marginals and any identification problems.

Entered by \_\_\_\_\_ date \_\_\_\_\_ on computer \_\_\_\_\_

Modified by \_\_\_\_\_ on \_\_\_\_\_

© Berry 1997

Write on this side only

Tortoise ID # \_\_\_\_\_  
Year first marked 2007  
Verification of ID ☐  
Capture type \_\_\_\_\_ Sex ♂  
Date (dd/mm/yy) 10 / 04 / 2007  
Time (PST): Start 1:50 pm End \_\_\_\_\_  
Frequency \_\_\_\_\_ Transmitter # \_\_\_\_\_  
Transmitter type \_\_\_\_\_  
Transmitter attached \_\_\_\_\_  
Transmitter to be replaced on \_\_\_\_\_  
PIT # \_\_\_\_\_


Show location of  
tortoise in quadrat

Coordinates (Reference SW corner)  
meters North meters East

UTM's 3853517 n 0556039 e

Elevation 700 m Accuracy  $\pm$  10' m

County SAN BERNARDINO State CA

☐ On Plot   ☐ Off Plot

## Tortoise Location

Cover site type:	At cover site:	Not at cover site:
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	1	1
10	1	1
11	1	1
12	1	1
13	1	1
14	1	1
15	1	1
16	1	1
17	1	1
18	1	1
19	1	1
20	1	1
21	1	1
22	1	1
23	1	1
24	1	1
25	1	1
26	1	1
27	1	1
28	1	1
29	1	1
30	1	1
31	1	1
32	1	1
33	1	1
34	1	1
35	1	1
36	1	1
37	1	1
38	1	1
39	1	1
40	1	1
41	1	1
42	1	1
43	1	1
44	1	1
45	1	1
46	1	1
47	1	1
48	1	1
49	1	1
50	1	1
51	1	1
52	1	1
53	1	1
54	1	1
55	1	1
56	1	1
57	1	1
58	1	1
59	1	1
60	1	1
61	1	1
62	1	1
63	1	1
64	1	1
65	1	1
66	1	1
67	1	1
68	1	1
69	1	1
70	1	1
71	1	1
72	1	1
73	1	1
74	1	1
75	1	1
76	1	1
77	1	1
78	1	1
79	1	1
80	1	1
81	1	1
82	1	1
83	1	1
84	1	1
85	1	1
86	1	1
87	1	1
88	1	1
89	1	1
90	1	1
91	1	1
92	1	1
93	1	1
94	1	1
95	1	1
96	1	1
97	1	1
98	1	1
99	1	1
100	1	1

- ☐ burrow  
☒ pallet  
☐ shrub  
☐ caliche cave  
☐ rock shelter
- ☐ entering  
☐ exiting  
☐ on mound  
☐ inside
- ☐ in open  
☐ other

## Tortoise Activity

- ☐ resting  
☒ basking  
☐ walking  
☐ feeding
- ☐ Interacting with other tortoise  
☐ Interacting with other animals  
 Describe interaction

Plants/items eaten (specific):

### Burrow Data


ID # .....  
Orientation Facing 300°  
Length approx 5' Height 6"  
Width 14" Soil cover SANDY  
Location CONSOLIDATED SANDY  
BERM AT BASE OF VOLCANIC HILL  
WINDBLOWN SAND, SMALL COBBLES  
ID & sex of other tortoise M  
Species .....

## Survey Type

- ☐ Radio track  
☐ Burrow search  
☐ Coverage 1  
☐ Coverage 2  
☒ Incidental  
☐ Other

Color (shell & skin)	HV	Hue	Value	Chroma	Color
----------------------	----	-----	-------	--------	-------

V1 (center)  
V4 (center)  
LC1,2&V2 (seam)  
LM5,6 & LC2 (seam)  
Foreleg  
Hindleg



TAN-GREY

Are you color blind?    ☐ Yes    ☒ No

Type of blindness .....

### Body Measurements

MCL (mm) \_\_\_\_\_  
PLN (mm) \_\_\_\_\_  
Weight (g) \_\_\_\_\_  
Void (g) \_\_\_\_\_  
Total wt (g) \_\_\_\_\_

New growth  
☐ present ☐ absent

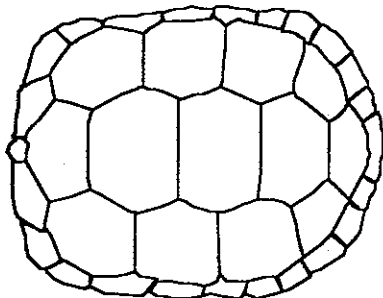
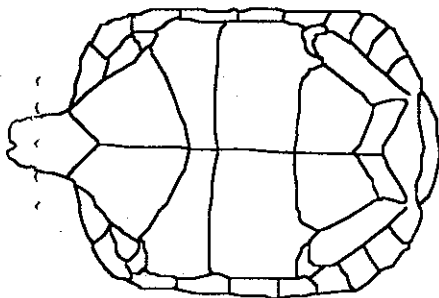
Epoxy #  
☐ present ☐ legible

Other notes

MALE

## Behavior

RESTING OUTSIDE  
BURROW,  
FACING WEST



Photos; roll YES frames \_\_\_\_\_

Draw locations of notches (old and new), chips, and anomalies, etc.

Describe anomalies in numbering of marginals and any identification problems.

Entered by  date   on computer

Modified by  on

Do not abbreviate

# Data Sheet for Live Desert Tortoises

HOISINGTON / HOWER 2 APRIL 2007

Write on this side only

Located by M. Hower  
Processed by G. HOISINGTON  
Study site name Solar 1

Township \_\_\_\_\_ Range \_\_\_\_\_  
Section \_\_\_\_\_ Quadrat \_\_\_\_\_

Coordinates (Reference SW corner)  
\_\_\_\_\_ meters North \_\_\_\_\_ meters East

WGS 84  
UTM's 0548795 n 3841026 e

Elevation 7657 ft Accuracy  $\pm$  15 ft

County San Bernardino State CA

☒ On Plot ☐ Off Plot

photo # 428

Tortoise ID # N/A

Year first marked \_\_\_\_\_

Verification of ID ☐

Capture type \_\_\_\_\_ Sex ?

Date (dd/mm/yy) 2 APRIL (2007)

Time (PST): Start \_\_\_\_\_ End \_\_\_\_\_

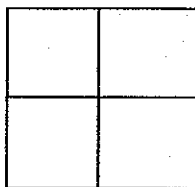
Frequency \_\_\_\_\_ Transmitter # \_\_\_\_\_

Transmitter type \_\_\_\_\_

Transmitter attached \_\_\_\_\_

Transmitter to be replaced on \_\_\_\_\_

PIT # \_\_\_\_\_

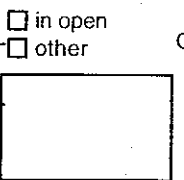


Show location of  
tortoise in quadrat

## Tortoise Location

Cover site type: ☒ burrow ☐ pallet ☐ shrub ☐ caliche cave ☐ rock shelter

At cover site: ☒ entering ☐ exiting ☐ on mound ☐ inside



## Burrow Data

ID # N/A

Orientation \_\_\_\_\_

Length Unknown Height 5"

Width 8" Soil cover decomposed granite

Location \_\_\_\_\_

## Survey Type

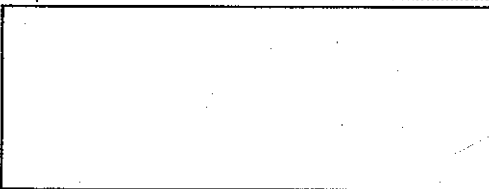
- ☐ Radio track  
☐ Burrow search  
☐ Coverage 1  
☐ Coverage 2  
☐ Incidental  
☐ Other

## Tortoise Activity

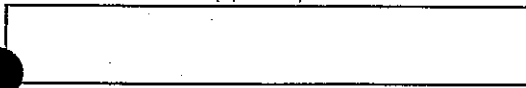
- ☒ resting ☐ basking ☐ walking ☐ feeding  
☐ Interacting with other tortoise  
☐ Interacting with other animals

Describe interaction:

ID & sex of other tortoise \_\_\_\_\_  
Species \_\_\_\_\_



Plants/items eaten (specific):



Color (shell & skin) HV Hue Value Chroma Color

V1 (center)

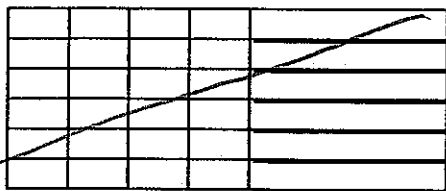
V4 (center)

LC1,2&V2 (seam)

LM5,6 & LC2 (seam)

Foreleg

Hindleg



Are you color blind? ☐ Yes ☐ No

Type of blindness \_\_\_\_\_

## Body Measurements

MCL (mm) \_\_\_\_\_

PLN (mm) \_\_\_\_\_

Weight (g) \_\_\_\_\_

Void (g) \_\_\_\_\_

Total wt (g) \_\_\_\_\_

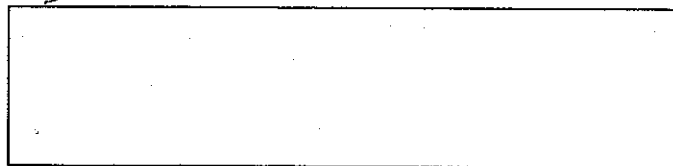
New growth

☐ present ☐ absent

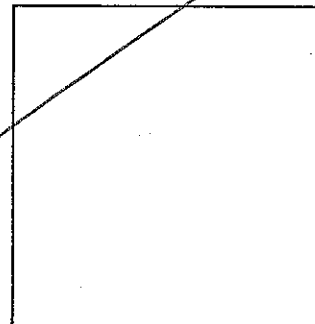
Epoxy #

☐ present ☐ legible

## Other notes



## Behavior



Photos; roll \_\_\_\_\_ frames \_\_\_\_\_

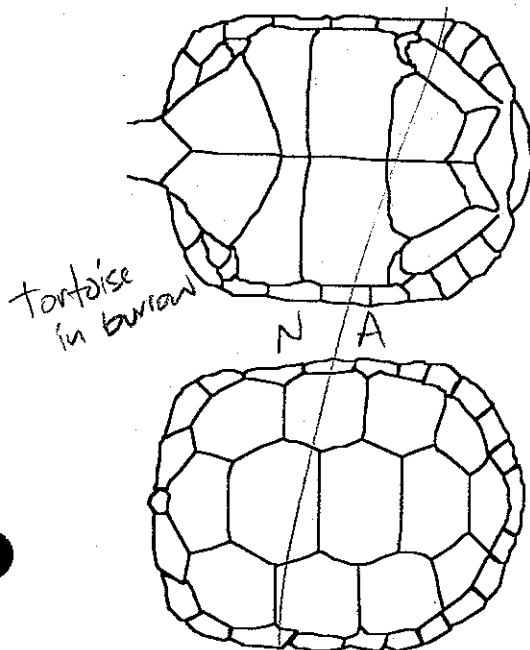
Draw locations of notches (old and new), chips, and anomalies, etc.

Describe anomalies in numbering of marginals and any identification problems.

Entered by \_\_\_\_\_ date \_\_\_\_\_ on computer \_\_\_\_\_

Modified by \_\_\_\_\_ on \_\_\_\_\_

© Berry 1997



Do not abbreviate

## Data Sheet for Live Desert Tortoises

Write on this side only

Located by M. HONER  
 Processed by C. HOISINGTON  
 Study site name SOLAR 1

Township \_\_\_\_\_ Range \_\_\_\_\_  
 Section \_\_\_\_\_ Quadrat \_\_\_\_\_

Coordinates (Reference SW corner)  
 \_\_\_\_\_ meters North \_\_\_\_\_ meters East

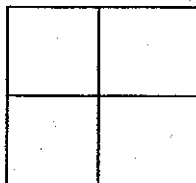
UTM's 0547964 n 3840192 e

Elevation 2876 ft Accuracy  $\pm$  13 ft

County SAN BERNARDINO State CA

☐ On Plot ☐ Off Plot

WAYPOINT 202 / Photo 448



Show location of  
tortoise in quadrat

Tortoise ID # \_\_\_\_\_  
 Year first marked \_\_\_\_\_  
 Verification of ID ☐  
 Capture type \_\_\_\_\_ Sex UNKNOWN  
 Date (dd/mm/yy) 3 APRIL 2007  
 Time (PST): Start 1046 End \_\_\_\_\_  
 Frequency \_\_\_\_\_ Transmitter # \_\_\_\_\_  
 Transmitter type \_\_\_\_\_  
 Transmitter attached \_\_\_\_\_  
 Transmitter to be replaced on \_\_\_\_\_  
 PIT # \_\_\_\_\_

## Tortoise Location

Cover site type: At cover site: Not at cover site:

- ☒ burrow ☐ entering ☐ in open  
☐ pallet ☐ exiting ☐ other  
☐ shrub ☐ on mound ☐  
☐ caliche cave ☒ inside  
☐ rock shelter

## Burrow Data

ID # \_\_\_\_\_  
 Orientation \_\_\_\_\_  
 Length \_\_\_\_\_ Height 5"  
 Width 12" Soil cover Decomposed granite  
 Location \_\_\_\_\_

## Survey Type

- ☐ Radio track  
☐ Burrow search  
☐ Coverage 1  
☐ Coverage 2  
☐ Incidental  
☐ Other

## Tortoise Activity

- ☒ resting ☐ Interacting with other tortoise  
☐ basking ☐ Interacting with other animals  
☐ walking  
☐ feeding

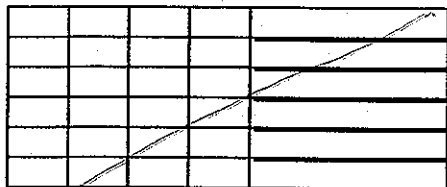
ID & sex of other tortoise \_\_\_\_\_  
 Species \_\_\_\_\_

Describe interaction:

Plants/items eaten (specific):

Color (shell & skin) HV Hue Value Chroma Color

V1 (center)  
 V4 (center)  
 LC1,2&V2 (seam)  
 LM5,6 & LC2 (seam)  
 Foreleg  
 Hindleg



Are you color blind? ☐ Yes ☐ No

Type of blindness \_\_\_\_\_

## Body Measurements

MCL (mm) \_\_\_\_\_  
 PLN (mm) \_\_\_\_\_  
 Weight (g) \_\_\_\_\_  
 Void (g) \_\_\_\_\_  
 Total wt (g) \_\_\_\_\_

New growth  
☐ present ☐ absent  
 Epoxy #  
☐ present ☐ legible

## Other notes

## Behavior

Photos; roll \_\_\_\_\_ frames \_\_\_\_\_

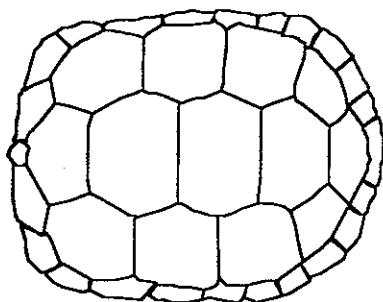
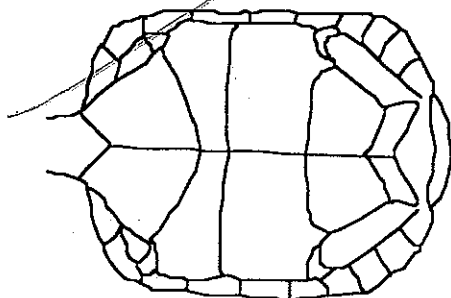
Draw locations of notches (old and new), chips, and anomalies, etc.

Describe anomalies in numbering of marginals and any identification problems.

Entered by \_\_\_\_\_ date \_\_\_\_\_ on computer \_\_\_\_\_

Modified by \_\_\_\_\_ on \_\_\_\_\_

© Berry 1997





Do not abbreviate

## Data Sheet for Live Desert Tortoises

Write on this side only

Located by R. BAILEY / G. HOISINGTON  
 Processed by \_\_\_\_\_  
 Study site name SOLAR 1 ARRAY

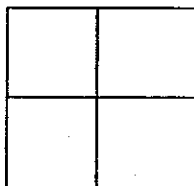
Township \_\_\_\_\_ Range \_\_\_\_\_  
 Section \_\_\_\_\_ Quadrat \_\_\_\_\_

Coordinates (Reference SW corner)

\_\_\_\_\_ meters North \_\_\_\_\_ meters East

UTM's 38S3495 n 0552623 eElevation \_\_\_\_\_ m Accuracy  $\pm$  \_\_\_\_\_ m

County \_\_\_\_\_ State \_\_\_\_\_

☐ On Plot ☐ Off Plot


Show location of tortoise in quadrat

Tortoise ID # \_\_\_\_\_

Year first marked \_\_\_\_\_

Verification of ID ☐

Capture type \_\_\_\_\_

Sex

UNKNOWNDate (dd/mm/yy) 16 MAY 2007

Time (PST): Start \_\_\_\_\_

End \_\_\_\_\_

Frequency \_\_\_\_\_

Transmitter # \_\_\_\_\_

Transmitter type \_\_\_\_\_

Transmitter attached \_\_\_\_\_

Transmitter to be replaced on \_\_\_\_\_

PIT # \_\_\_\_\_

## Tortoise Location

Cover site type: ☒ burrow ☐ pallet ☐ shrub ☐ caliche cave ☐ rock shelter

At cover site:

☐ entering☐ exiting☐ on mound☒ inside

Not at cover site:

☐ in open☐ other

## Tortoise Activity

☐ resting☐ basking☐ walking☐ feeding☐ Interacting with other tortoise☐ Interacting with other animals

Describe interaction:

Plants/items eaten (specific):

## Burrow Data

ID # \_\_\_\_\_

Orientation \_\_\_\_\_

Length \_\_\_\_\_ Height \_\_\_\_\_

Width \_\_\_\_\_ Soil cover \_\_\_\_\_

Location \_\_\_\_\_

ID &amp; sex of other tortoise \_\_\_\_\_

Species \_\_\_\_\_

BURROW LOCATED IN OPEN,  
 RELATIVELY FLAT TERRAIN  
 WITH LITTLE GRAVEL/COBBLE

## Survey Type

☐ Radio track☐ Burrow search☐ Coverage 1☐ Coverage 2☐ Incidental☐ Other

Color (shell &amp; skin) HV Hue Value Chroma Color

V1 (center)

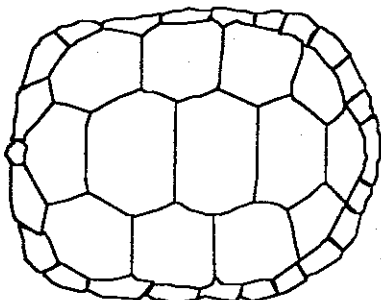
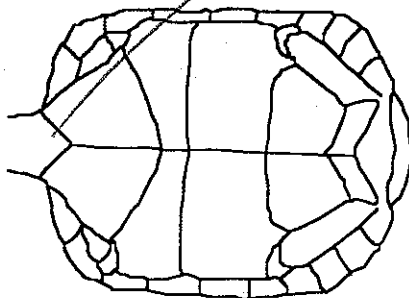
V4 (center)

LC1,2&amp;V2 (seam)

LM5,6 &amp; LC2 (seam)

Foreleg

Hindleg


Are you color blind? ☐ Yes ☐ No

Type of blindness \_\_\_\_\_

## Body Measurements

MCL (mm) \_\_\_\_\_

PLN (mm) \_\_\_\_\_

Weight (g) \_\_\_\_\_

Void (g) \_\_\_\_\_

Total wt (g) \_\_\_\_\_

New growth

☐ present ☐ absent

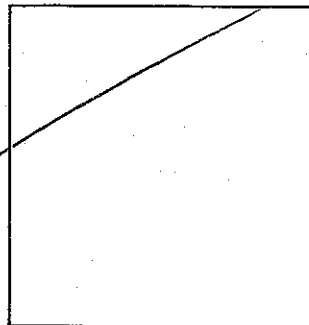
Epoxy #

☐ present ☒ legible

## Other notes

TORTOISE LOCATED DEEP INSIDE  
 BURROW (~4' deep)

## Behavior



Photos: roll \_\_\_\_\_ frames \_\_\_\_\_

Draw locations of notches (old and new), chips, and anomalies, etc.

Describe anomalies in numbering of marginals and any identification problems.

Entered by \_\_\_\_\_ date \_\_\_\_\_ on computer \_\_\_\_\_

Modified by \_\_\_\_\_ on \_\_\_\_\_

© Berry 1997

Do not abbreviate

## Data Sheet for Live Desert Tortoises

Write on this side only

Located by R. BAILEY / G. HOISINGTON  
 Processed by \_\_\_\_\_  
 Study site name SOLAR I. ARRAY

Township \_\_\_\_\_ Range \_\_\_\_\_  
 Section \_\_\_\_\_ Quadrat \_\_\_\_\_

Coordinates (Reference SW corner)  
 \_\_\_\_\_ meters North \_\_\_\_\_ meters East

UTM's 3852763 n 0596775 e  
 Elevation 2293 ft Accuracy  $\pm$  3 m

County \_\_\_\_\_ State \_\_\_\_\_

☐ On Plot ☐ Off Plot

Tortoise ID # \_\_\_\_\_

Year first marked \_\_\_\_\_

Verification of ID ☐

Capture type \_\_\_\_\_

Sex

UNKNOWNDate (dd/mm/yy) 18 MAY 2007

Time (PST): Start

0950

End \_\_\_\_\_

Frequency \_\_\_\_\_

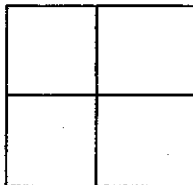
Transmitter # \_\_\_\_\_

Transmitter type \_\_\_\_\_

Transmitter attached \_\_\_\_\_

Transmitter to be replaced on \_\_\_\_\_

PIT # \_\_\_\_\_



Show location of  
tortoise in quadrat

## Tortoise Location

Cover site type: ☒ At cover site: ☐ Not at cover site: ☐

- ☒ burrow  
☐ pallet  
☐ shrub  
☐ caliche cave  
☐ rock shelter
- ☐ entering  
☐ exiting  
☐ on mound  
☒ inside
- ☐ in open  
☐ other

## Tortoise Activity

- ☐ resting  
☐ basking  
☐ walking  
☐ feeding
- ☐ Interacting with other tortoise  
☐ Interacting with other animals
- Describe interaction: \_\_\_\_\_

Plants/items eaten (specific):

\_\_\_\_\_

## Burrow Data

ID # \_\_\_\_\_

Orientation \_\_\_\_\_

Length \_\_\_\_\_ Height \_\_\_\_\_

Width \_\_\_\_\_ Soil cover \_\_\_\_\_

Location \_\_\_\_\_

ID &amp; sex of other tortoise \_\_\_\_\_

Species \_\_\_\_\_

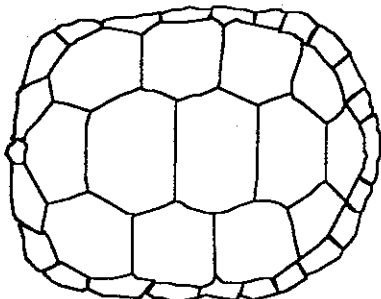
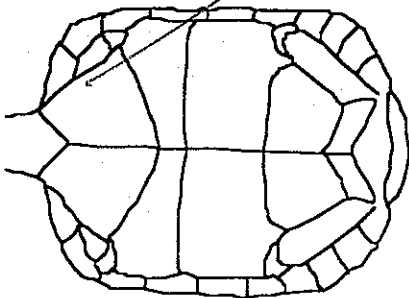
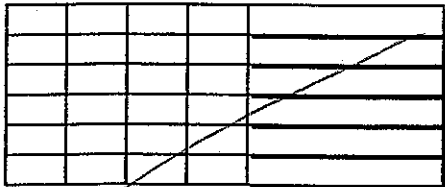
BURROW LOCATED UNDER  
 OPUNTIA RAMNOSISSIMA  
 ALONG SMALL WASH BANK WITHIN  
 AN EXPANSIVE ALLUVIAL FLOOD  
 PLAIN. LARGE COBBLE/GRAVEL WITH FEW OPEN AREAS

## Survey Type

- ☐ Radio track  
☐ Burrow search  
☐ Coverage 1  
☐ Coverage 2  
☐ Incidental  
☐ Other

Color (shell & skin) HV Hue Value Chroma Color

V1 (center)  
 V4 (center)  
 LC1,2&V2 (seam)  
 LM5,6 & LC2 (seam)  
 Foreleg  
 Hindleg



Are you color blind? ☐ Yes ☐ No

Type of blindness \_\_\_\_\_

## Body Measurements

MCL (mm) \_\_\_\_\_

PLN (mm) \_\_\_\_\_

Weight (g) \_\_\_\_\_

Void (g) \_\_\_\_\_

Total wt (g) \_\_\_\_\_

New growth

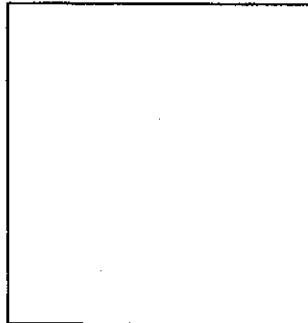
☐ present ☐ absent

Epoxy #

☐ present ☐ legible

Other notes

## Behavior



TORTOISE INSIDE BURROW

Photos; roll \_\_\_\_\_ frames \_\_\_\_\_

Draw locations of notches (old and new), chips, and anomalies, etc.

Describe anomalies in numbering of marginals and any identification problems.

Entered by \_\_\_\_\_ date \_\_\_\_\_ on computer \_\_\_\_\_

Modified by \_\_\_\_\_ on \_\_\_\_\_

© Berry 1997

21 MAY 2007

Do not abbreviate

## Data Sheet for Live Desert Tortoises

Write on this side only

Located by Ellen Howard

Processed by \_\_\_\_\_

Study site name \_\_\_\_\_

Township \_\_\_\_\_ Range \_\_\_\_\_

Section \_\_\_\_\_ Quadrat \_\_\_\_\_

Coordinates (Reference SW corner)

\_\_\_\_\_ meters North \_\_\_\_\_ meters East

UTM's 3854451 n 0556672 eElevation 2505 ft Accuracy  $\pm$  15 ft

County \_\_\_\_\_ State \_\_\_\_\_

☐ On Plot ☐ Off Plot

Tortoise ID # \_\_\_\_\_

Year first marked \_\_\_\_\_

Verification of ID ☐

Capture type \_\_\_\_\_

Sex

UNKNOWN

Date (dd/mm/yy)

21 MAY 2007

Time (PST): Start

0924

End \_\_\_\_\_

Frequency \_\_\_\_\_

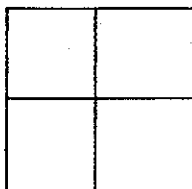
Transmitter # \_\_\_\_\_

Transmitter type \_\_\_\_\_

Transmitter attached \_\_\_\_\_

Transmitter to be replaced on \_\_\_\_\_

PIT # \_\_\_\_\_

Show location of  
tortoise in quadrat

## Tortoise Location

Cover site type:

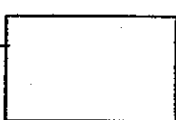
- ☒ burrow  
☐ pallet  
☐ shrub  
☐ caliche cave  
☐ rock shelter

At cover site:

- ☐ entering  
☐ exiting  
☐ on mound  
☒ inside

Not at cover site:

- ☐ in open  
☐ other



## Burrow Data

ID # \_\_\_\_\_

Orientation \_\_\_\_\_

Length \_\_\_\_\_

Width \_\_\_\_\_

Location \_\_\_\_\_

Height \_\_\_\_\_

Soil cover \_\_\_\_\_

## Survey Type

- ☐ Radio track  
☐ Burrow search  
☐ Coverage 1  
☐ Coverage 2  
☐ Incidental  
☐ Other

## Tortoise Activity

- ☒ resting  
☐ basking  
☐ walking  
☐ feeding

☐ Interacting with other tortoise☐ Interacting with other animals

Describe interaction:

ID &amp; sex of other tortoise \_\_\_\_\_

Species \_\_\_\_\_

Plants/items eaten (specific):

Color (shell &amp; skin)

HV Hue Value Chroma

Color

V1 (center)

V4 (center)

LC1,2&amp;V2 (seam)

LM5,6 &amp; LC2 (seam)

Foreleg

Hindleg


Are you color blind?

☐ Yes ☐ No

Type of blindness \_\_\_\_\_

## Body Measurements

MCL (mm) \_\_\_\_\_

PLN (mm) \_\_\_\_\_

Weight (g) \_\_\_\_\_

Void (g) \_\_\_\_\_

Total wt (g) \_\_\_\_\_

New growth

☐ present ☐ absent

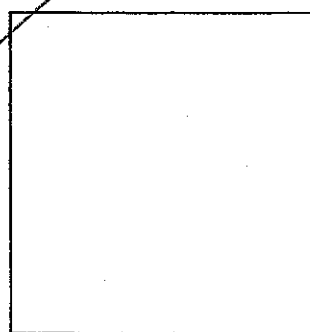
Epoxy #

☐ present ☐ legible

## Other notes

TORTOISE IN BURROW UNDER CREOSOTE BUSH ALONG  
 BANK OF SWAMP WASH

## Behavior



Photos: roll \_\_\_\_\_ frames \_\_\_\_\_

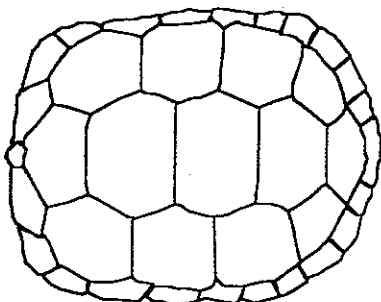
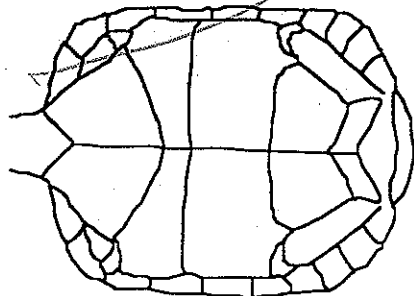
Draw locations of notches (old and new), chips, and anomalies, etc.

Describe anomalies in numbering of marginals and any identification problems.

Entered by \_\_\_\_\_ date \_\_\_\_\_ on computer \_\_\_\_\_

Modified by \_\_\_\_\_ on \_\_\_\_\_

© Berry 1997



Do not abbreviate

## Data Sheet for Live Desert Tortoises

Write on this side only

Located by Ellen Howard  
 Processed by \_\_\_\_\_  
 Study site name \_\_\_\_\_

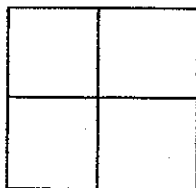
Township \_\_\_\_\_ Range \_\_\_\_\_  
 Section \_\_\_\_\_ Quadrat \_\_\_\_\_

Coordinates (Reference SW corner)  
 \_\_\_\_\_ meters North \_\_\_\_\_ meters East

UTM's 3853528 n 0556859 e  
 Elevation 2360 ft Accuracy  $\pm$  6 m

County \_\_\_\_\_ State \_\_\_\_\_

☐ On Plot ☐ Off Plot



Show location of  
tortoise in quadrat

Tortoise ID # \_\_\_\_\_  
 Year first marked \_\_\_\_\_  
 Verification of ID ☐  
 Capture type \_\_\_\_\_ Sex UNKNOWN  
 Date (dd/mm/yy) 21 MAY 2007  
 Time (PST): Start 1136 End \_\_\_\_\_  
 Frequency \_\_\_\_\_ Transmitter # \_\_\_\_\_  
 Transmitter type \_\_\_\_\_  
 Transmitter attached \_\_\_\_\_  
 Transmitter to be replaced on \_\_\_\_\_  
 PIT # \_\_\_\_\_

## Tortoise Location

Cover site type: At cover site: Not at cover site:

- ☒ burrow  
☐ pallet  
☐ shrub  
☐ caliche cave  
☐ rock shelter
- ☐ entering  
☐ exiting  
☐ on mound  
☒ inside
- ☐ in open  
☐ other



## Burrow Data

ID # \_\_\_\_\_  
 Orientation \_\_\_\_\_  
 Length \_\_\_\_\_ Height \_\_\_\_\_  
 Width \_\_\_\_\_ Soil cover \_\_\_\_\_  
 Location \_\_\_\_\_

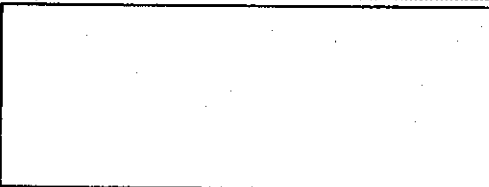
## Survey Type

- ☐ Radio track  
☐ Burrow search  
☐ Coverage 1  
☐ Coverage 2  
☐ Incidental  
☐ Other

## Tortoise Activity

- ☒ resting  
☐ basking  
☐ walking  
☐ feeding
- ☐ Interacting with other tortoise  
☐ Interacting with other animals
- Describe interaction: \_\_\_\_\_

ID & sex of other tortoise \_\_\_\_\_  
 Species \_\_\_\_\_



Plants/items eaten (specific):



Color (shell & skin) HV Hue Value Chroma Color

V1 (center)  
 V4 (center)  
 LC1,2&V2 (seam)  
 LM5,6 & LC2 (seam)  
 Foreleg  
 Hindleg


Are you color blind? ☐ Yes ☐ No

Type of blindness \_\_\_\_\_

## Body Measurements

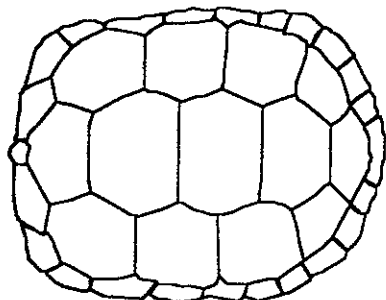
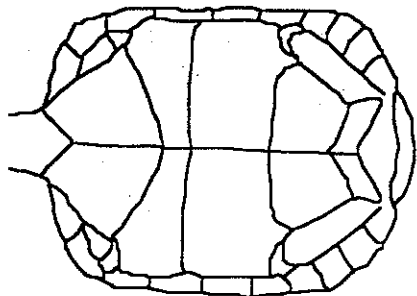
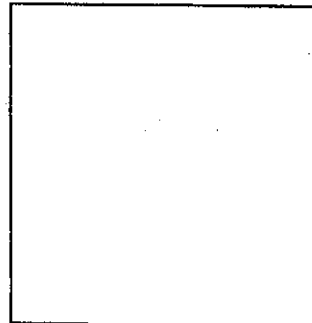
MCL (mm) \_\_\_\_\_  
 PLN (mm) \_\_\_\_\_  
 Weight (g) \_\_\_\_\_  
 Void (g) \_\_\_\_\_  
 Total wt (g) \_\_\_\_\_

New growth  
☐ present ☐ absent  
 Epoxy #  
☐ present ☐ legible

## Other notes

TORTOISE IN BURROW UNDER CREOSOTE IN  
 OPEN BRANDED SHEET FLOW WARE ROAD  
 IN WASH

## Behavior



Photos: roll \_\_\_\_\_ frames \_\_\_\_\_

Draw locations of notches (old and new), chips, and anomalies, etc.  
 Describe anomalies in numbering of marginals and any identification problems.

Entered by \_\_\_\_\_ date \_\_\_\_\_ on computer \_\_\_\_\_

Modified by \_\_\_\_\_ on \_\_\_\_\_

Do not abbreviate

## Data Sheet for Live Desert Tortoises

Write on this side only

Located by Ellen Howard, Claudia Solorzano

Processed by

Study site name Solar 1 quad 17181920

Township \_\_\_\_\_ Range \_\_\_\_\_

Section \_\_\_\_\_ Quadrat \_\_\_\_\_

Coordinates (Reference SW corner)

\_\_\_\_\_ meters North \_\_\_\_\_ meters East

UTM's 3652394 n 558189 eElevation \_\_\_\_\_ m Accuracy  $\pm$  10 mCounty SAN BERNARDINO State CA☒ On Plot ☐ Off Plot

Tortoise ID #

NYPT TORTOISE 1

Year first marked \_\_\_\_\_

Verification of ID ☐

Capture type \_\_\_\_\_

Sex M

Date (dd/mm/yy)

17-05-07

Time (PST): Start

8:15 am

End \_\_\_\_\_

Frequency \_\_\_\_\_

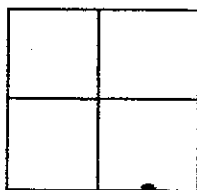
Transmitter # \_\_\_\_\_

Transmitter type \_\_\_\_\_

Transmitter attached \_\_\_\_\_

Transmitter to be replaced on \_\_\_\_\_

PIT # \_\_\_\_\_

Show location of  
tortoise in quadrat

## Tortoise Location

Cover site type:

- ☒ burrow  
☒ pallet  
☐ shrub  
☐ caliche cave  
☐ rock shelter

At cover site:

- ☐ entering  
☐ exiting  
☒ on mound  
☐ inside

Not at cover site:

- ☐ in open  
☐ other

## Tortoise Activity

- ☒ resting  
☐ interacting with other tortoise  
☒ basking  
☐ interacting with other animals  
☐ walking  
☐ feeding

Describe interaction:

Plants/items eaten (specific):

## Burrow Data

ID # \_\_\_\_\_

Orientation EAST

Length \_\_\_\_\_

Width \_\_\_\_\_

Location \_\_\_\_\_

Height \_\_\_\_\_

Soil cover GRAVEL

## Survey Type

- ☐ Radio track  
☐ Burrow search  
☐ Coverage 1  
☐ Coverage 2  
☐ Incidental  
☐ Other

Color (shell &amp; skin)

HV

Hue Value Chroma

Color

V1 (center)

V4 (center)

LC1,2&amp;V2 (seam)

LM5,6 &amp; LC2 (seam)

Foreleg

Hindleg

Are you color blind? ☐ Yes ☒ No

Type of blindness \_\_\_\_\_

## Body Measurements

MCL (mm) \_\_\_\_\_

PLN (mm) \_\_\_\_\_

Weight (g) \_\_\_\_\_

Void (g) \_\_\_\_\_

Total wt (g) \_\_\_\_\_

New growth

☐ present ☐ absent

Epoxy #

☐ present ☐ legible

## Other notes

## Behavior

Photos: roll \_\_\_\_\_ frames \_\_\_\_\_

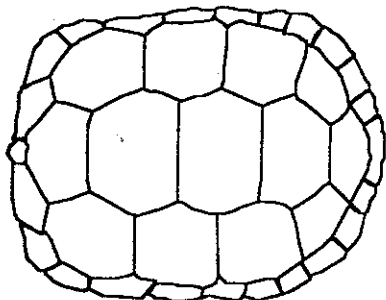
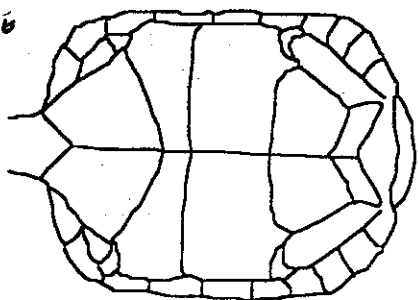
Draw locations of notches (old and new), chips, and anomalies, etc.

Describe anomalies in numbering of marginals and any identification problems.

Entered by \_\_\_\_\_ date \_\_\_\_\_ on computer \_\_\_\_\_

Modified by \_\_\_\_\_ on \_\_\_\_\_

© Berry 1997



Do not abbreviate

# Data Sheet for Live Desert Tortoises

Write on this side only

Located by Dallas Pugh & Corey Chan  
Processed by Dallas Pugh  
Study site name Solar #

Township \_\_\_\_\_ Range \_\_\_\_\_  
Section \_\_\_\_\_ Quadrat \_\_\_\_\_

Coordinates (Reference SW corner)  
\_\_\_\_\_ meters North \_\_\_\_\_ meters East

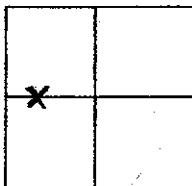
UTM's 559053 n 3052988 e

Elevation \_\_\_\_\_ m Accuracy  $\pm$  \_\_\_\_\_ m

County Riverside State CA

☒ On Plot ☐ Off Plot

Tortoise ID # \_\_\_\_\_  
Year first marked \_\_\_\_\_  
Verification of ID ☐  
Capture type \_\_\_\_\_ Sex \_\_\_\_\_  
Date (dd/mm/yy) \_\_\_\_\_  
Time (PST): Start \_\_\_\_\_ End \_\_\_\_\_  
Frequency \_\_\_\_\_ Transmitter # \_\_\_\_\_  
Transmitter type \_\_\_\_\_  
Transmitter attached \_\_\_\_\_  
Transmitter to be replaced on \_\_\_\_\_  
PIT # \_\_\_\_\_



Show location of  
tortoise in quadrat

## Tortoise Location

Cover site type: ☒ burrow ☐ pallet ☐ shrub ☐ caliche cave ☐ rock shelter

At cover site: ☐ entering ☐ exiting ☐ on mound ☒ inside

Not at cover site: ☐ in open ☐ other

☒ burrow ☐ pallet ☐ shrub ☐ caliche cave ☐ rock shelter

☐ entering ☐ exiting ☐ on mound ☒ inside

☐ in open ☐ other

## Burrow Data

ID # \_\_\_\_\_  
Orientation SW  
Length 4 feet Height 10 inches  
Width 1.5 feet Soil cover \_\_\_\_\_  
Location \_\_\_\_\_

## Survey Type

☐ Radio track  
☐ Burrow search  
☐ Coverage 1  
☐ Coverage 2  
☐ Incidental  
☒ Other

## Tortoise Activity

☒ resting ☐ basking ☐ walking ☐ feeding  
☐ Interacting with other tortoise  
☐ Interacting with other animals

ID & sex of other tortoise \_\_\_\_\_

Species \_\_\_\_\_

Describe interaction:

Plants/items eaten (specific):

Focused Surveys

Color (shell & skin) HV Hue Value Chroma Color

V1 (center)  
V4 (center)  
LC1,2&V2 (seam)  
LM5,6 & LC2 (seam)  
Foreleg  
Hindleg


Are you color blind? ☐ Yes ☐ No

Type of blindness \_\_\_\_\_

## Body Measurements

MCL (mm) \_\_\_\_\_  
PLN (mm) \_\_\_\_\_  
Weight (g) \_\_\_\_\_  
Void (g) \_\_\_\_\_  
Total wt (g) \_\_\_\_\_

New growth  
☐ present ☐ absent  
Epoxy #  
☐ present ☐ legible

## Behavior

Other notes

Photos: roll \_\_\_\_\_ frames \_\_\_\_\_

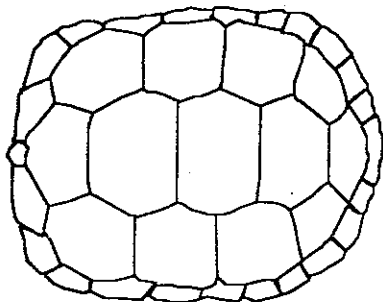
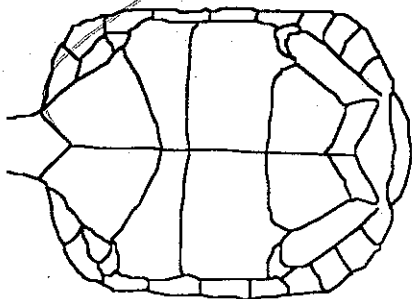
Draw locations of notches (old and new), chips, and anomalies, etc.

Describe anomalies in numbering of marginals and any identification problems.

Entered by \_\_\_\_\_ date \_\_\_\_\_ on computer \_\_\_\_\_

Modified by \_\_\_\_\_ on \_\_\_\_\_

© Berry 1997



Do not abbreviate

## Data Sheet for Live Desert Tortoises

Write on this side only

Located by Dallas High & Corey Chan  
 Processed by Dallas High  
 Study site name Solar I

Township \_\_\_\_\_ Range \_\_\_\_\_  
 Section \_\_\_\_\_ Quadrat \_\_\_\_\_

Coordinates (Reference SW corner)  
 \_\_\_\_\_ meters North \_\_\_\_\_ meters East

UTM's 558338 n 3853929 e

Elevation \_\_\_\_\_ m Accuracy ± \_\_\_\_\_ m

County Riverside State CA

☒ On Plot ☐ Off Plot

Tortoise ID # \_\_\_\_\_

Year first marked \_\_\_\_\_

Verification of ID ☐

Capture type \_\_\_\_\_

Sex UNKDate (dd/mm/yy) 17/05/07Time (PST): Start 1110 End 1117

Frequency \_\_\_\_\_

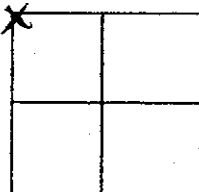
Transmitter # \_\_\_\_\_

Transmitter type \_\_\_\_\_

Transmitter attached \_\_\_\_\_

Transmitter to be replaced on \_\_\_\_\_

PIT # \_\_\_\_\_



Show location of  
tortoise in quadrat

## Tortoise Location

Cover site type: At cover site: Not at cover site:

- ☒ burrow ☐ entering ☐ in open  
☐ pallet ☐ exiting ☐ other  
☐ shrub ☐ on mound  
☐ caliche cave ☒ inside  
☐ rock shelter

## Burrow Data

ID # \_\_\_\_\_  
 Orientation East → NE  
 Length 3.0 feet Height 1.0 feet  
 Width 1.5 feet Soil cover Rocky  
 Location \_\_\_\_\_

## Survey Type

- ☐ Radio track  
☐ Burrow search  
☐ Coverage 1  
☐ Coverage 2  
☐ Incidental  
☒ Other

## Tortoise Activity

- ☒ resting ☐ Interacting with other tortoise  
☐ basking ☐ Interacting with other animals  
☐ walking  
☐ feeding

ID &amp; sex of other tortoise \_\_\_\_\_

Species \_\_\_\_\_

Describe interaction: \_\_\_\_\_

Plants/items eaten (specific): \_\_\_\_\_

Focused survey

## Color (shell &amp; skin)

HV Hue Value Chroma

Color

V1 (center)  
 V4 (center)  
 LC1,2&V2 (seam)  
 LM5,6 & LC2 (seam)  
 Foreleg  
 Hindleg


Are you color blind? ☐ Yes ☐ No

Type of blindness \_\_\_\_\_

## Body Measurements

MCL (mm) \_\_\_\_\_

PLN (mm) \_\_\_\_\_

Weight (g) \_\_\_\_\_

Void (g) \_\_\_\_\_

Total wt (g) \_\_\_\_\_

New growth

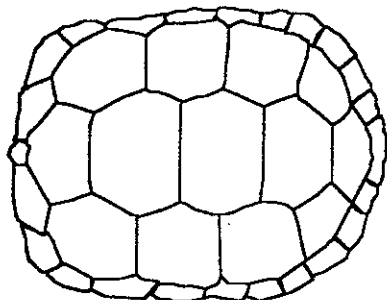
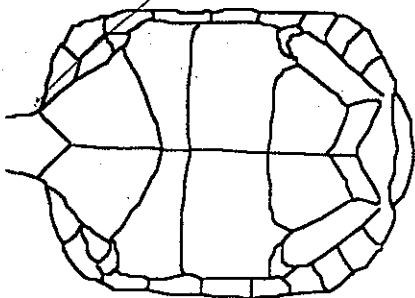
☐ present ☐ absent

Epoxy #

☐ present ☐ legible

## Other notes

## Behavior



Photos; roll \_\_\_\_\_ frames \_\_\_\_\_

Draw locations of notches (old and new), chips, and anomalies, etc.

Describe anomalies in numbering of marginals and any identification problems.

Entered by \_\_\_\_\_ date \_\_\_\_\_ on computer \_\_\_\_\_

Modified by \_\_\_\_\_ on \_\_\_\_\_

© Berry 1997



16 MAY 2007 R. BAILEY, G. HOISINGTON

#1

Do not abbreviate

## Data Sheet for Live Desert Tortoises

Write on this side only

Located by R. BAILEY  
 Processed by \_\_\_\_\_  
 Study site name \_\_\_\_\_

Township \_\_\_\_\_ Range \_\_\_\_\_  
 Section \_\_\_\_\_ Quadrat \_\_\_\_\_

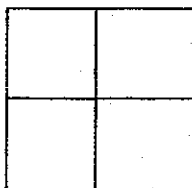
Coordinates (Reference SW corner)  
 \_\_\_\_\_ meters North \_\_\_\_\_ meters East

UTM's 0553684 n 3853843 e

Elevation 2205 m Accuracy  $\pm$  4 m

County \_\_\_\_\_ State \_\_\_\_\_

☒ On Plot ☐ Off Plot



Show location of  
tortoise in quadrat

Tortoise ID # \_\_\_\_\_

Year first marked \_\_\_\_\_

Verification of ID ☒

Capture type \_\_\_\_\_ Sex M

Date (dd/mm/yy) 16 MAY 2007

Time (PST): Start 0916 End \_\_\_\_\_

Frequency \_\_\_\_\_ Transmitter # \_\_\_\_\_

Transmitter type \_\_\_\_\_

Transmitter attached \_\_\_\_\_

Transmitter to be replaced on \_\_\_\_\_

PIT # \_\_\_\_\_

## Tortoise Location

Cover site type: At cover site: Not at cover site:

- ☐ burrow ☐ entering ☒ in open  
☐ pallet ☐ exiting ☐ other  
☐ shrub ☐ on mound  
☐ caliche cave ☐ inside  
☐ rock shelter

## Burrow Data

ID # \_\_\_\_\_  
 Orientation \_\_\_\_\_  
 Length \_\_\_\_\_ Height \_\_\_\_\_  
 Width \_\_\_\_\_ Soil cover \_\_\_\_\_  
 Location \_\_\_\_\_

## Survey Type

- ☐ Radio track  
☐ Burrow search  
☐ Coverage 1  
☐ Coverage 2  
☐ Incidental  
☐ Other

## Tortoise Activity

- ☐ resting ☐ Interacting with other tortoise  
☐ basking ☐ Interacting with other animals  
☒ walking  
☐ feeding

ID & sex of other tortoise \_\_\_\_\_  
 Species \_\_\_\_\_

Describe interaction:

Plants/items eaten (specific):

Color (shell & skin) HV Hue Value Chroma Color

V1 (center)  
 V4 (center)  
 LC1,2&V2 (seam)  
 LM5,6 & LC2 (seam)  
 Foreleg  
 Hindleg


Are you color blind? ☐ Yes ☐ No

Type of blindness \_\_\_\_\_

## Body Measurements

MCL (mm) \_\_\_\_\_  
 PLN (mm) \_\_\_\_\_  
 Weight (g) \_\_\_\_\_  
 Void (g) \_\_\_\_\_  
 Total wt (g) \_\_\_\_\_

New growth

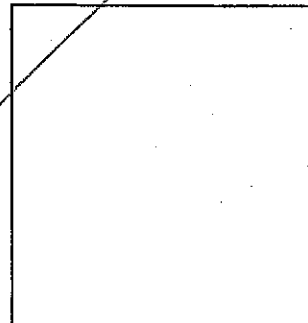
☐ present ☐ absent

Epoxy #

☐ present ☐ legible

Other notes

## Behavior



Appears in good health - no damage to carapace,  
 no signs of respiratory disease

G. HOISINGTON Photo #S 968, 969

Photos; roll \_\_\_\_\_ frames \_\_\_\_\_

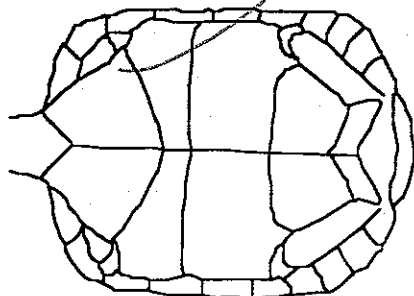
Draw locations of notches (old and new), chips, and anomalies, etc.

Describe anomalies in numbering of marginals and any identification problems.

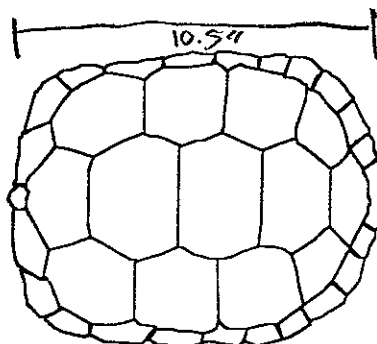
Entered by \_\_\_\_\_ date \_\_\_\_\_ on computer \_\_\_\_\_

Modified by \_\_\_\_\_ on \_\_\_\_\_

© Berry 1997



6.25"



10.5"

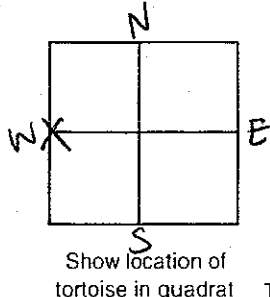
Do not abbreviate

# Data Sheet for Live Desert Tortoises

Write on this side only

Located by Dallas Pugh & Corey Chan  
Processed by Dallas Pugh  
Study site name Solar I

Tortoise ID # \_\_\_\_\_  
Year first marked \_\_\_\_\_  
Verification of ID ☐  
Capture type \_\_\_\_\_ Sex \_\_\_\_\_  
Date (dd/mm/yy) May 16, 2007  
Time (PST): Start 1100 End \_\_\_\_\_  
Frequency \_\_\_\_\_ Transmitter # \_\_\_\_\_  
Transmitter type \_\_\_\_\_  
Transmitter attached \_\_\_\_\_  
Transmitter to be replaced on \_\_\_\_\_  
PIT # \_\_\_\_\_



Township \_\_\_\_\_ Range \_\_\_\_\_  
Section \_\_\_\_\_ Quadrat \_\_\_\_\_  
Coordinates (Reference SW corner)  
\_\_\_\_\_ meters North \_\_\_\_\_ meters East  
UTM's 558092 n 3851950 e  
Elevation \_\_\_\_\_ m Accuracy ± \_\_\_\_\_ m  
County Riverside State CA  
☐ On Plot ☐ Off Plot

## Tortoise Location

Cover site type: ☒ burrow ☐ pallet ☐ shrub ☐ caliche cave ☐ rock shelter  
At cover site: ☐ entering ☐ exiting ☐ on mound ☒ inside  
Not at cover site: ☐ in open ☐ other

## Burrow Data

ID # \_\_\_\_\_  
Orientation Facing NE  
Length 2.5 ft Height 3.0 inch  
Width 1.0 ft Soil cover \_\_\_\_\_  
Location \_\_\_\_\_

## Survey Type

☐ Radio track  
☐ Burrow search  
☐ Coverage 1  
☐ Coverage 2  
☐ Incidental  
☒ Other

## Tortoise Activity

☒ resting ☐ basking ☐ walking ☐ feeding  
☐ Interacting with other tortoise  
☐ Interacting with other animals  
Describe interaction: \_\_\_\_\_

ID & sex of other tortoise \_\_\_\_\_  
Species \_\_\_\_\_

Focused surveys

Plants/items eaten (specific): \_\_\_\_\_

Color (shell & skin) HV Hue Value Chroma Color

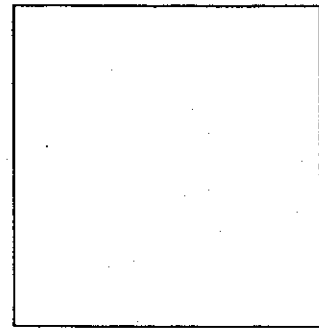
V1 (center)					
V4 (center)					
LC1,2&V2 (seam)					
LM5,6 & LC2 (seam)					
Foreleg					
Hindleg					

Are you color blind? ☐ Yes ☐ No/  
Type of blindness \_\_\_\_\_

## Body Measurements

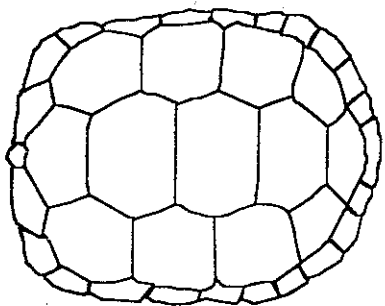
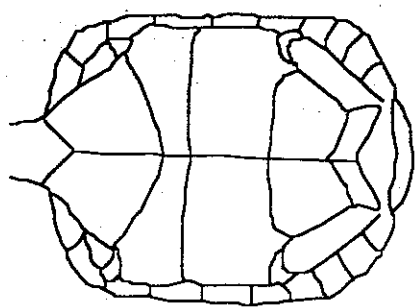
MCL (mm) \_\_\_\_\_  
PLN (mm) \_\_\_\_\_  
Weight (g) \_\_\_\_\_  
Void (g) \_\_\_\_\_  
Total wt (g) \_\_\_\_\_  
New growth  
☐ present ☐ absent  
Epoxy #  
☐ present ☐ legible

## Behavior



## Other notes

\_\_\_\_\_



Photos: roll \_\_\_\_\_ frames \_\_\_\_\_

Draw locations of notches (old and new), chips, and anomalies, etc.  
Describe anomalies in numbering of marginals and any identification problems.

Entered by \_\_\_\_\_ date \_\_\_\_\_ on computer \_\_\_\_\_

Modified by \_\_\_\_\_ on \_\_\_\_\_

HOISINGTON/HONER 2 APRIL 2007

January 1992

place a 4 X 6 photograph showing the area where the transect was conducted)

This form should be completed for those transects that contain one or more desert tortoise sign. After the project site and one of Influence have been surveyed for tortoise sign, the results from the transect forms should be compiled on a summary form.

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

M/D/Y  
Date 2 APRIL 2007  
Transect No. \_\_\_\_\_  
State CA  
County San Bernardino  
City Barstow  
Recorder G. Hoisington / M. Honer  
Address URS  
Project Name SOLAR 1  
Type of Project \_\_\_\_\_  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 1/4 Sec \_\_\_\_\_  
UTM Zone 11S WGS84  
Northing 0549955  
Easting 3841902  
Parcel No. \_\_\_\_\_

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site ☒ Zone of Influence ☐ \_\_\_\_\_ ft from Project Site  
Transect Length: \_\_\_\_\_ ft Width: 30 ft Other \_\_\_\_\_ ft Time \_\_\_\_\_  
Weather: Airtemp at: 5 cm 80 °F Surface 85 °F Cloud cover 50 %  
Rainfall 0 in Wind speed 12 mph Rainfall in last 30 days < 0.1 in  
Land Form (e.g., mesa, bajada, wash) Gently sloping alluvial fan  
Slope: high \_\_\_\_\_ low 5° NE Aspect \_\_\_\_\_ Elevation 2904 ft  
Soils cobble  
Vegetation: dominant perennials Creosote burrowbush scrub

dominant annuals \_\_\_\_\_

Adjacent Land Use: up to 1 mi warmer base  
Soils cobble  
Vegetation Creosote burrowbush scrub

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>	12" diameter Male
		Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>				
A=	J=			M=	F=	Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma Middens w/sign	Middens w/o sign

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/Rifle Shells	Blading	Ravens	Other

transmission line

January 1992

Place a 4 X 6 photograph showing the area where the transect was conducted)

This form should be completed for those transects that contain one or more desert tortoise sign. After the project site and zone of influence have been surveyed for tortoise sign, the results from the transect forms should be compiled on a summary form.

If no tortoise sign occurs on the project site zone of influence, the summary form should be completed. Please fill in all sections on top 2/3 of the page of the summary form.

M/D/Y  
Date 2 APRIL 2007  
Transect No. \_\_\_\_\_  
State CA  
County San Bernardino  
City Barstow  
Recorder G. Hoisington / M. Honer  
Address URS  
Project Name SOLAR 1  
Type of Project \_\_\_\_\_  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 1/4 Sec \_\_\_\_\_  
UTM Zone 11S WGS 84  
Northing 0549955  
Easting 3841902  
Parcel No. \_\_\_\_\_

MAP 35

## DESERT TORTOISE HANDBOOK 1992:

## FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site ☒ Zone of Influence ☐ \_\_\_\_\_ ft from Project Site  
Transect Length: \_\_\_\_\_ ft Width: 30 ft Other \_\_\_\_\_ ft Time \_\_\_\_\_  
Weather: Airtemp at: 5 cm 80 °F Surface 85 °F Cloud cover 50 %  
Rainfall 0 in Wind speed 12 mph Rainfall in last 30 days < 0.1 in  
Land Form (e.g., mesa, bajada, wash) Gently sloping alluvial fan  
Slope: high \_\_\_\_\_ low 5° NE Aspect \_\_\_\_\_ Elevation 2904 ft  
Soils cobble  
Vegetation: dominant perennials Creosote burrowbush scrub  
dominant annuals \_\_\_\_\_

Adjacent Land Use: up to 1 mi Marine base  
Soils cobble  
Vegetation Creosote burrowbush scrub

Corrected		Live		TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>
Sign	Tortoises Adult/Juv.	Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>					
A=	J=					A= 12" J=	Unk=
M=	F=					Unk=	

12" diameter Male

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma Middens w/sign	Middens w/o sign

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/Rifle Shells	Blading	Ravens	Other

transmission line

Do not abbreviate

## Data Sheet for Live Desert Tortoises

Write on this side only

Located by MICHAEL HUNER + KRISTIN MARSH

Processed by \_\_\_\_\_

Study site name "SOLAR 6"

Township \_\_\_\_\_ Range \_\_\_\_\_

Section \_\_\_\_\_ Quadrant \_\_\_\_\_

Coordinates (Reference SW corner)

\_\_\_\_\_ meters North \_\_\_\_\_ meters East

UTM's 0555205 n 3853502 eElevation 3210 m Accuracy ± 2248 FT mCounty S. BERNARDINO State CA☐ On Plot ☐ Off PlotTortoise ID # Slc-Lnc DT1

Year first marked \_\_\_\_\_

Verification of ID ☐

Capture type \_\_\_\_\_

Sex \_\_\_\_\_

Date (dd/mm/yy) 14 Mar 2008Time (PST): Start 3:35pm

End \_\_\_\_\_

Frequency \_\_\_\_\_

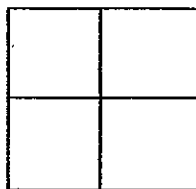
Transmitter # \_\_\_\_\_

Transmitter type \_\_\_\_\_

Transmitter attached \_\_\_\_\_

Transmitter to be replaced on \_\_\_\_\_

PIT # \_\_\_\_\_



Show location of tortoise in quadrat

## Tortoise Location

Cover site type: ☐ At cover site: ☐ Not at cover site: ☒☐ burrow☐ pallet☐ shrub☐ caliche cave☐ rock shelter☐ entering☐ exiting☐ on mound☐ inside☒ in open☐ other

2 m. from  
ACTIVE  
BURROW

## Burrow Data

ID # \_\_\_\_\_

Orientation SW facingLength 12"Width 5"

Location \_\_\_\_\_

Height 5"Soil cover sand, gravel

## Survey Type

☐ Radio track☐ Burrow search☐ Coverage 1☐ Coverage 2☒ Incidental☒ Other

## Tortoise Activity

☐ resting☒ basking☐ walking☐ feeding☐ Interacting with other tortoise☐ Interacting with other animals

Describe interaction: \_\_\_\_\_

ID & sex of other tortoise probably MALESpecies GOPHERUS AGILIS

RARE PLANT

Plants/items eaten (specific):

Color (shell &amp; skin) HV Hue Value Chroma Color

V1 (center)

V4 (center)

LC1,2&amp;V2 (seam)

LM5,6 &amp; LC2 (seam)

Foreleg

Hindleg


Are you color blind? ☐ Yes ☒ No

Type of blindness \_\_\_\_\_

## Body Measurements

MCL (mm) \_\_\_\_\_

PLN (mm) \_\_\_\_\_

Weight (g) \_\_\_\_\_

Void (g) \_\_\_\_\_

Total wt (g) \_\_\_\_\_

New growth

☐ present ☐ absent

Epoxy #

☐ present ☐ legible

## Other notes

APPX 13" Long by 8-9" WIDE  
5-6" Tall

## Behavior

Photos; roll \_\_\_\_\_ frames Yes

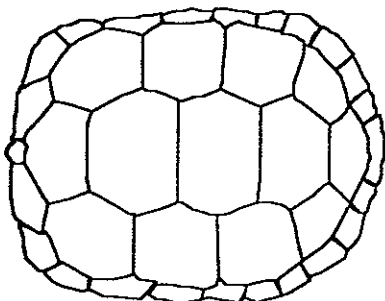
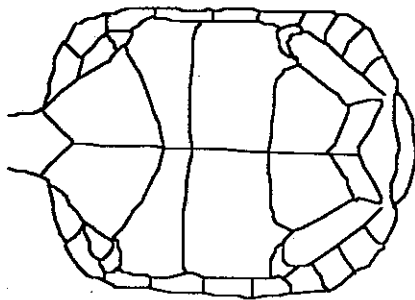
Draw locations of notches (old and new), chips, and anomalies, etc.

Describe anomalies in numbering of marginals and any identification problems.

Entered by M. HUNER date \_\_\_\_\_ on computer \_\_\_\_\_

Modified by \_\_\_\_\_ on \_\_\_\_\_

© Berry 1997

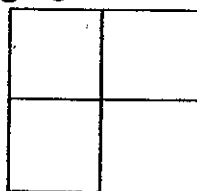


Do not abbreviate

## Data Sheet for Live Desert Tortoises

Write on this side only

Located by M. Haner & K. Marsh  
 Processed by \_\_\_\_\_  
 Study site name Solar One Site Solar 3 site  
 Township \_\_\_\_\_ Range \_\_\_\_\_  
 Section \_\_\_\_\_ Quadrate \_\_\_\_\_  
 Coordinates (Reference SW corner)  
 \_\_\_\_\_ meters North \_\_\_\_\_ meters East  
 UTM's 055226.0 n 385358.7 e  
 Elevation 2159 ft m Accuracy  $\pm$  10 ft m  
 County \_\_\_\_\_ State \_\_\_\_\_  
☐ On Plot ☐ Off Plot



Show location of tortoise in quadrat

Tortoise ID # Desertort Live 2  $\neq$  GPS marker S3\_LineDTL  
 Year first marked \_\_\_\_\_  
 Verification of ID ☐  
 Capture type \_\_\_\_\_ Sex \_\_\_\_\_  
 Date (dd/mm/yy) 03/17/08  
 Time (PST): Start 11:22 AM End \_\_\_\_\_  
 Frequency \_\_\_\_\_ Transmitter # \_\_\_\_\_  
 Transmitter type \_\_\_\_\_  
 Transmitter attached \_\_\_\_\_  
 Transmitter to be replaced on \_\_\_\_\_  
 PIT # \_\_\_\_\_

## Tortoise Location

Cover site type: ☒ At cover site: ☐ Not at cover site:

- ☒ burrow mouth of ☐ entering ☐ in open  
☐ pallet ☒ exiting ☐ other  
☐ shrub ☐ on mound  
☐ caliche cave ☐ inside  
☐ rock shelter

## Burrow Data

ID # \_\_\_\_\_  
 Orientation unk  
 Length 10 in Height 6 in  
 Width 10 in Soil cover sandy gravel  
 Location east-facing bank of wash

## Survey Type

- ☐ Radio track  
☐ Burrow search  
☐ Coverage 1  
☐ Coverage 2  
☐ Incidental  
☐ Other

## Tortoise Activity

- ☒ resting ☐ Interacting with other tortoise  
☒ basking ☐ Interacting with other animals  
☐ walking  
☐ feeding

ID & sex of other tortoise pass  
 Species \_\_\_\_\_

Describe interaction:

Plants/items eaten (specific):

Color (shell &amp; skin) HV Hue Value Chroma Color

V1 (center)  
 V4 (center)  
 LC1,2&V2 (seam)  
 LM5,6 & LC2 (seam)  
 Foreleg  
 Hindleg


Are you color blind? ☐ Yes ☒ No

Type of blindness \_\_\_\_\_

## Body Measurements

Length 12 in.  
 MCL (mm) \_\_\_\_\_  
 PLN (mm) \_\_\_\_\_  
 Weight (g) \_\_\_\_\_  
 Void (g) \_\_\_\_\_  
 Total wt (g) \_\_\_\_\_

## Behavior

New growth  
☐ present ☐ absent  
 Epoxy #  
☐ present ☐ legible

## Other notes

Photos; roll \_\_\_\_\_ frames \_\_\_\_\_

Draw locations of notches (old and new), chips, and anomalies, etc.

Describe anomalies in numbering of marginals and any identification problems.

Entered by \_\_\_\_\_ date \_\_\_\_\_ on computer \_\_\_\_\_

Modified by \_\_\_\_\_ on \_\_\_\_\_

© Berry 1997

Do not abbreviate

## Data Sheet for Live Desert Tortoises

Write on this side only

Located by Glen Kinschita

Processed by \_\_\_\_\_

Study site name \_\_\_\_\_

Township \_\_\_\_\_ Range \_\_\_\_\_

Section \_\_\_\_\_ Quadrat \_\_\_\_\_

Coordinates (Reference SW corner)

\_\_\_\_\_ meters North \_\_\_\_\_ meters East

UTM's 546004 n 3855236 eElevation 1263 ft m Accuracy  $\pm$  6 ft mCounty San Bernardino State CA☐ On Plot ☐ Off Plot

Tortoise ID # \_\_\_\_\_

Year first marked \_\_\_\_\_

Verification of ID ☐

Capture type \_\_\_\_\_

Sex \_\_\_\_\_

Date (dd/mm/yy) 20/03/2008

Time (PST): Start \_\_\_\_\_

End \_\_\_\_\_

Frequency \_\_\_\_\_

Transmitter # \_\_\_\_\_

Transmitter type \_\_\_\_\_

Transmitter attached \_\_\_\_\_

Transmitter to be replaced on \_\_\_\_\_

PIT # \_\_\_\_\_

## Tortoise Location

Cover site type: At cover site: Not at cover site:

☐ burrow☐ entering☒ in open☐ pallet☐ exiting☐ other☐ shrub☐ on mound☐ caliche cave☐ inside☐ rock shelter

## Tortoise Activity

☐ resting☐ Interacting with other tortoise☐ basking☐ Interacting with other animals☒ walking

Describe interaction: \_\_\_\_\_

☐ feeding

Plants/items eaten, (specific):

## Burrow Data

ID # \_\_\_\_\_

Orientation \_\_\_\_\_

Length \_\_\_\_\_

Height \_\_\_\_\_

Width \_\_\_\_\_

Soil cover \_\_\_\_\_

Location \_\_\_\_\_

## Survey Type

☐ Radio track☐ Burrow search☐ Coverage 1☐ Coverage 2☐ Incidental☒ Otherrare plant  
survey

Color (shell &amp; skin) HV Hue Value Chroma Color

V1 (center)

V4 (center)

LC1,2&amp;V2 (seam)

LM5,6 &amp; LC2 (seam)

Foreleg

Hindleg

Are you color blind? ☐ Yes ☒ No

Type of blindness \_\_\_\_\_

## Body Measurements

MCL (mm) \_\_\_\_\_

PLN (mm) \_\_\_\_\_

Weight (g) \_\_\_\_\_

Void (g) \_\_\_\_\_

Total wt (g) \_\_\_\_\_

New growth

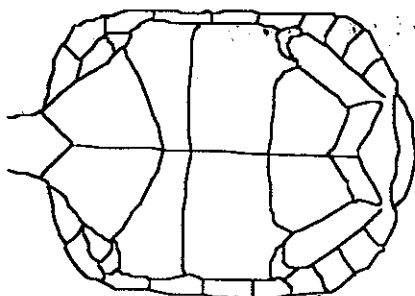
☐ present ☐ absent

Epoxy #

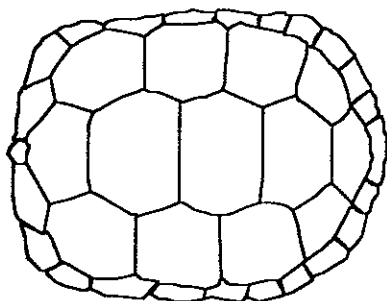
☐ present ☐ legible

## Other notes

## Behavior

walking, froze  
when encountered  
and withdrew  
into shell

no marks or damage



Photos; roll \_\_\_\_\_ frames \_\_\_\_\_

Draw locations of notches (old and new), chips, and anomalies, etc.

Describe anomalies in numbering of marginals and any identification problems.

Entered by \_\_\_\_\_ date \_\_\_\_\_ on computer \_\_\_\_\_

Modified by \_\_\_\_\_ on \_\_\_\_\_

© Berry 1997



Do not abbreviate

## Data Sheet for Live Desert Tortoises

Write on this side only

Located by K. Marsh, T. Ontl, E. Klein

Processed by \_\_\_\_\_

Study site name Solar 6 Project

Township \_\_\_\_\_ Range \_\_\_\_\_

Section \_\_\_\_\_ Quadrat \_\_\_\_\_

Coordinates (Reference SW corner)

\_\_\_\_\_ meters North \_\_\_\_\_ meters East

UTM's 15 8562095 n 3847050 e 2476 elev.Elevation \_\_\_\_\_ m Accuracy  $\pm$  \_\_\_\_\_ m

County \_\_\_\_\_ State \_\_\_\_\_

☐ On Plot ☐ Off PlotTortoise ID # Destor Live 2

Year first marked \_\_\_\_\_

Verification of ID ☐Capture type \_\_\_\_\_ Sex MDate (dd/mm/yy) 3/30/08Time (PST): Start 12:00 End \_\_\_\_\_

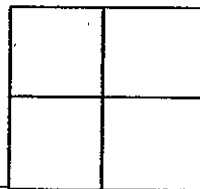
Frequency \_\_\_\_\_ Transmitter # \_\_\_\_\_

Transmitter type \_\_\_\_\_

Transmitter attached \_\_\_\_\_

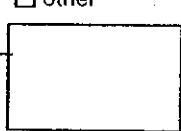
Transmitter to be replaced on \_\_\_\_\_

PIT # \_\_\_\_\_



Show location of tortoise in quadrat

## Tortoise Location

Cover site type: ☐ At cover site: ☐ Not at cover site:☐ burrow☐ paler☐ shrub☐ caliche cave☐ rock shelter☐ entering☐ exiting☐ on mound☐ inside☐ in open☐ other

## Burrow Data

ID # \_\_\_\_\_

Orientation \_\_\_\_\_

Length \_\_\_\_\_ Height \_\_\_\_\_

Width \_\_\_\_\_ Soil cover \_\_\_\_\_

Location \_\_\_\_\_

## Survey Type

☐ Radio track☐ Burrow search☐ Coverage 1☐ Coverage 2☐ Incidental☐ Other

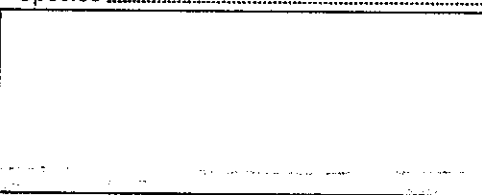
## Tortoise Activity

☐ resting☐ basking☒ walking☒ feeding☒ Interacting with other tortoise☐ Interacting with other animals

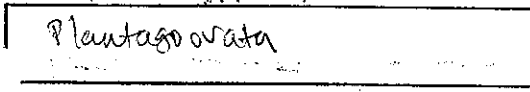
Describe interaction:

ID & sex of other tortoise Destor Live 1

Species \_\_\_\_\_



Plants/items eaten (specific):



Color (shell &amp; skin) HV Hue Value Chroma Color

V1 (center)

V4 (center)

LC1,2&amp;V2 (seam)

LM5,6 &amp; LC2 (seam)

Foreleg

Hindleg


Are you color blind? ☐ Yes ☐ No

Type of blindness \_\_\_\_\_

## Body Measurements

MCL (mm) \_\_\_\_\_

PLN (mm) \_\_\_\_\_

Weight (g) \_\_\_\_\_

Void (g) \_\_\_\_\_

Total wt (g) \_\_\_\_\_

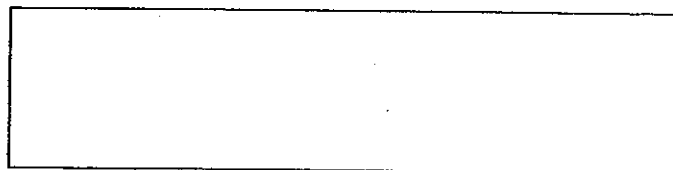
New growth

☐ present ☐ absent

Epoxy #

☐ present ☐ legible

## Other notes



Photos: roll \_\_\_\_\_ frames \_\_\_\_\_

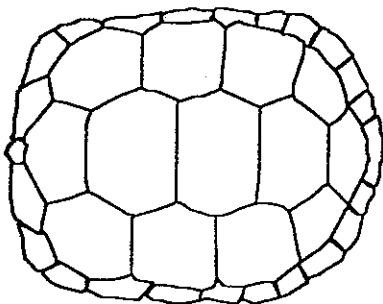
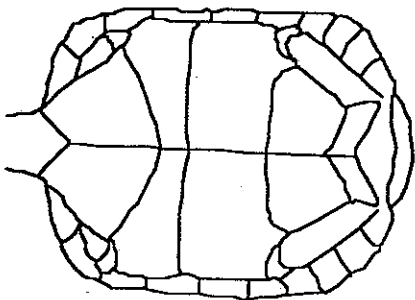
Draw locations of notches (old and new), chips, and anomalies, etc.

Describe anomalies in numbering of marginals and any identification problems.

Entered by \_\_\_\_\_ date \_\_\_\_\_ on computer \_\_\_\_\_

Modified by \_\_\_\_\_ on \_\_\_\_\_

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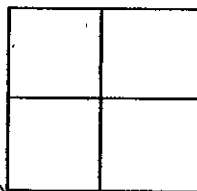


Do not abbreviate

## Data Sheet for Live Desert Tortoises

Write on this side only

Located by P. Marsh, T. Ditt, E. Klein  
 Processed by \_\_\_\_\_  
 Study site name Solar 6 project  
 Township \_\_\_\_\_ Range \_\_\_\_\_  
 Section \_\_\_\_\_ Quadrat \_\_\_\_\_  
 Coordinates (Reference SW corner)  
 \_\_\_\_\_ meters North \_\_\_\_\_ meters East  
 UTM's 11S 0562078 n 3847059 e 248741 elevation  
 Elevation \_\_\_\_\_ m Accuracy  $\pm$  \_\_\_\_\_ m  
 County \_\_\_\_\_ State \_\_\_\_\_  
☐ On Plot ☐ Off Plot



Show location of tortoise in quadrat

Tortoise ID # Desert Live 562  
 Year first marked \_\_\_\_\_  
 Verification of ID ☐  
 Capture type \_\_\_\_\_ Sex M  
 Date (dd/mm/yy) 3/30/08  
 Time (PST): Start 11:51 End \_\_\_\_\_  
 Frequency \_\_\_\_\_ Transmitter # \_\_\_\_\_  
 Transmitter type \_\_\_\_\_  
 Transmitter attached \_\_\_\_\_  
 Transmitter to be replaced on \_\_\_\_\_  
 PIT # \_\_\_\_\_

## Tortoise Location

Cover site type: At cover site: Not at cover site:  
☐ burrow ☐ entering ☒ in open  
☐ pallet ☐ exiting ☐ other  
☐ shrub ☐ on mound ☐ on road  
☐ caliche cave ☐ inside  
☐ rock shelter

## Burrow Data

ID # \_\_\_\_\_  
 Orientation \_\_\_\_\_  
 Length \_\_\_\_\_ Height \_\_\_\_\_  
 Width \_\_\_\_\_ Soil cover \_\_\_\_\_  
 Location \_\_\_\_\_

## Survey Type

☐ Radio track  
☐ Burrow search  
☐ Coverage 1  
☐ Coverage 2  
☐ Incidental  
☐ Other

## Tortoise Activity

☐ resting ☒ Interacting with other tortoise  
☐ basking ☐ Interacting with other animals  
☒ walking Describe interaction:  
☒ feeding

ID & sex of other tortoise Desert Live 562  
 Species \_\_\_\_\_

Plants/Items eaten (specific):

Color (shell &amp; skin) HV Hue Value Chroma Color

V1 (center)  
 V4 (center)  
 LC1,2&V2 (seam)  
 LM5,6 & LC2 (seam)  
 Foreleg  
 Hindleg


Are you color blind? ☐ Yes ☐ No

Type of blindness \_\_\_\_\_

## Body Measurements

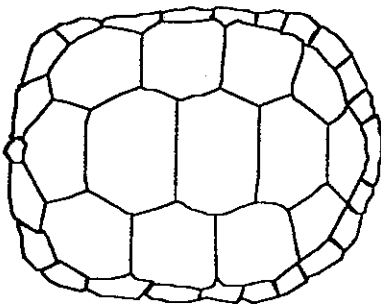
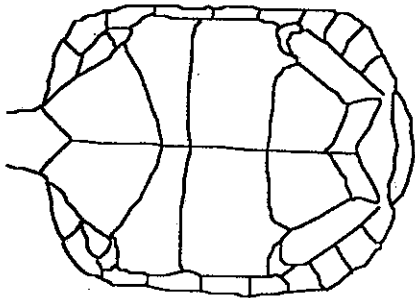
MCL (mm) \_\_\_\_\_  
 PLN (mm) \_\_\_\_\_  
 Weight (g) \_\_\_\_\_  
 Void (g) \_\_\_\_\_  
 Total wt (g) \_\_\_\_\_

New growth  
☐ present ☐ absent  
 Epoxy #  
☐ present ☐ legible

## Other notes

## Behavior

15 in long  
12 in wide  
8 in tall  
walking on road



Photos; roll \_\_\_\_\_ frames \_\_\_\_\_

Draw locations of notches (old and new), chips, and anomalies, etc.  
 Describe anomalies in numbering of marginals and any identification problems.

Entered by \_\_\_\_\_ date \_\_\_\_\_ on computer \_\_\_\_\_

Modified by \_\_\_\_\_ on \_\_\_\_\_

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January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

This form should be completed for those transects that contain one or more desert tortoise sign. After the project site and Zone of Influence have been surveyed for tortoise sign, the results from the transect forms should be compiled on a summary form.

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

photos: 12668, 6669

M/D/Y  
Date 4/1/08  
Transect No. \_\_\_\_\_  
State CA  
County San Bernardino  
City Redglen  
Recorder Ken Kinschta  
Address \_\_\_\_\_  
Project Name Solar L  
Type of Project \_\_\_\_\_

Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 3/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. 6-901, 6-502, 6-503, 6-504

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site ☒ Zone of Influence ☐ \_\_\_\_\_ ft from Project Site  
Transect Length: \_\_\_\_\_ ft Width: 20 ft Other \_\_\_\_\_ ft Time 9:51 am 80 acres total  
Weather: Airtemp at: 5 cm 61.3 °F Surface 67.0 °F Cloud cover 0 %  
Rainfall 0 in Wind speed 2-4 mph Rainfall in last 30 days \_\_\_\_\_ in  
Land Form (e.g., mesa, bajada, wash) waking hills  
Slope: high \_\_\_\_\_ low X Aspect \_\_\_\_\_ Elevation 2423 ft  
Soils sandy w/ cobbles  
Vegetation: dominant perennials Larrea tridentata  
dominant annuals Amsinckia, Cryptantha  
Adjacent Land Use: up to 1 mi house, old mine  
Soils sandy / cobbles  
Vegetation same

area previously  
scrubbed

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>	
		Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>				
A=	J=			M=	F=	Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma Middens w/sign	Middens w/o sign

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/Rifle Shells	Blading	Ravens	Other
N	Y	N	N	N	N	N	N	

(place a 4 X 6 photograph showing the area where the transect was conducted)

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

6754, 6755

M/D/Y  
Date 2/1/08  
Transect No. \_\_\_\_\_  
State CA  
County San Bernardino  
City Barstow  
Recorder Glen Kinsdale  
Address \_\_\_\_\_  
Project Name \_\_\_\_\_  
Type of Project \_\_\_\_\_  
\_\_\_\_\_  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 3/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. 6-461, 6-470, 6-471, 6-472

## FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site X Zone of Influence ||          ft from Project Site  
Transect Length:          ft Width: 30 ft Other          ft Time 13:44 20 acres  
Weather: Airtemp at: 5 cm 78.1 ~~°F~~ Surface 83.5 ~~°F~~ Cloud cover 10 %  
Rainfall 0 in Wind speed 4 mph Rainfall in last 30 days          in  
Land Form (e.g., mesa, bajada, wash) rolling hill  
& Slope: high          low x Aspect NA Elevation 2733 ft  
Soils sandy w/ cobbles  
Vegetation: dominant perennials Larrea tridentata, Pluraphis virgida

dominant annuals Erigeron, Schizanthus, Cryptantha

Adjacent Land Use: up to 1 mi house mine, f-line corridor, grazed in past

## Soils

## Vegetation

		<u>TOTAL NUMBER OF</u>		
Corrected	Live	Shelter Sites	Scats <sup>2</sup>	Shell
Sign	Tortoises	Pallet/Burrow/Den	( 15 )	Remains <sup>3</sup>
	Adult/Juv.	Active/Inactive <sup>1</sup>		

[illegible]

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	<u>Neotoma</u> w/sign	Middens :w/o sign
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SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/ Rifle Shells	Blading	Ravens	Other
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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466
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January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

This form should be completed for those transects that contain one or more desert tortoise sign. After the project site and Zone of Influence have been surveyed for tortoise sign, the results from the transect forms should be compiled on a summary form.

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

6752 - 6759

M/D/Y  
Date 4/4/08  
Transect No. 2  
State CA  
County San Bernardino  
City Burton/Ludlow  
Recorder Glenn Kinsella  
Address                       
Project Name Solar 6  
Type of Project solar  
power site  
Quad Name                       
Scale                       
Site Name                       
T                      R                      Sec                       
1/4 Sec                      3/4 Sec                       
UTM Zone                       
Northing                       
Easting                       
Parcel No. 6-533, 6-534, 6-535, 6-536

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site 1/4 Zone of Influence 1/4 ft from Project Site  
Transect Length:                      ft Width: 30 ft Other                      ft Time 13:40 30 acres  
Weather: Airtemp at: 5 cm 78.0°F Surface 80.5 °F Cloud cover                      %  
Rainfall                      in Wind speed 4 mph Rainfall in last 30 days                      in  
Land Form (e.g., mesa, bajada, wash) rolling hills  
Slope: high                      low X Aspect NE Elevation 2527 ft  
Soils sandy w/ cobbles, pebbles  
Vegetation: dominant perennials Larrea tridentata, Ambrosia dumosa  
dominant annuals Amaranthus, Plantago, Schismus

Adjacent Land Use: up to 1 mi radio tower, under ground pipelines  
Soils sandy  
Vegetation sage

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>			
		Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>						
A=	J=	<u>     </u>	<u>     </u>	M=	F=	A=	J=	Unk=
Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma w/sign	Middens w/o sign		
<u>Y</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>		

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/Rifle Shells	Blading	Ravens	Other
<u>N</u>	<u>Y</u>	<u>N</u>	<u>Y</u>	<u>N</u>	<u>N</u>	<u>Y</u>	<u>N</u>	<u>—</u>

TORT 6 562704 3847185 ~ 10 cm length in burrow

TORT 7 562704 3847186 20 cm length

6756

rocky hillside

6756

rocky hillside male

w/EK, RK, KM, TT

M/D/Y  
Date 7/2/08  
Transect No. \_\_\_\_\_  
State CA \_\_\_\_\_  
County San Bernardino  
City Bonsai  
Recorder Glen Kinoshita  
Address \_\_\_\_\_  
Project Name \_\_\_\_\_  
Type of Project \_\_\_\_\_

Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 1/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
parcel No. L-505-6-506, 6-5

4677-6679

## FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Adjacent Land Use: up to 1 mi away, old mch

		TOTAL	NUMBER	OF					
Corrected Sign	Live Tortoises Adult/Juv.		Shelter Sites Pallet/Burrow/Den Active/ <u>Inactive</u> <sup>1</sup>		Scats <sup>2</sup>		Shell Remains <sup>3</sup>		
A=	J=		<del>     </del>	M=	A=	J=	Unk=		
			<del>  </del>	F=		Unk=			

[illegible]

January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

This form should be completed for those transects that contain one or more desert tortoise sign. After the project site and Zone of Influence have been surveyed for tortoise sign, the results from the transect forms should be compiled on a summary form.

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

67A-67D3

w/ER, KM, RK, JT  
M/D/Y  
Date 2/2/00  
Transect No. \_\_\_\_\_  
State CA  
County San Bernardino  
City Barstow  
Recorder Glen Kinsinger  
Address \_\_\_\_\_  
Project Name Sidarb  
Type of Project \_\_\_\_\_  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 3/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. 6427, 6471, 6475, 6476

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site X Zone of Influence \_\_\_\_\_ ft from Project Site  
Transect Length: \_\_\_\_\_ ft Width: 30 ft Other \_\_\_\_\_ ft Time 13:00 80 acres  
Weather: Airtemp at: 5 cm 82.1°F Surface 87.6°F Cloud cover 5 %  
Rainfall 0 in Wind speed 5-10 mph Rainfall in last 30 days \_\_\_\_\_ in  
Land Form (e.g., mesa, bajada, wash) \_\_\_\_\_  
Slope: high \_\_\_\_\_ low \_\_\_\_\_ Aspect \_\_\_\_\_ Elevation \_\_\_\_\_ ft  
Soils sandy w/ cobbles  
Vegetation: dominant perennials Larrea tridentata, Pluraphis rigida  
dominant annuals Amaranthus, Cryptantha, Dactyloctenium

Adjacent Land Use: up to 1 mi house, old mine, area used for grazing mpm  
Soils sandy w/ cobbles  
Vegetation same as site

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>		
		Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>			A=	J=	Unk=
			<u>     </u>				
			<u>     </u>				

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma w/sign	Middens w/o sign

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/Rifle Shells	Blading	Ravens	Other
<u>Y</u>	<u>Y</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>Y</u>	<u>Y</u>

January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

This form should be completed for those transects that contain one or more desert tortoise sign. After the project site and Zone of Influence have been surveyed for tortoise sign, the results from the transect forms should be compiled on a summary form.

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

6786

Date 4/4/08  
Transect No. \_\_\_\_\_  
State CA  
County San Bernardino  
City Darstellung  
Recorder Glenn K. ...  
Address \_\_\_\_\_  
Project Name Solar 6  
Type of Project power site  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 3/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. 6-261-6-962, 6-462, 6-464

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site ☒ Zone of Influence ☐ \_\_\_\_\_ ft from Project Site 80 acres  
Transect Length: \_\_\_\_\_ ft Width: 30 ft Other \_\_\_\_\_ ft Time 10:14  
Weather: Airtemp at: 5 cm 70.0 °F Surface 73.1 °F Cloud cover 50 % (thin, w/ sp/ty)  
Rainfall 0 in Wind speed 4-6 mph Rainfall in last 30 days \_\_\_\_\_ in  
Land Form (e.g., mesa, bajada, wash) \_\_\_\_\_  
Slope: high \_\_\_\_\_ low X Aspect N/A Elevation 2377 ft  
Soils Sand w/ pebbles  
Vegetation: dominant perennials Larrea tridentata, Palafoxia rigida  
dominant annuals Amorpha

Adjacent Land Use: up to 1 mi old mine, transmission lines  
Soils same  
Vegetation same

		TOTAL NUMBER OF			
Corrected Sign	Live Tortoises Adult/Juv.	Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>	Scats <sup>2</sup>	Shell Remains <sup>3</sup>	
A=	J=		M=	A= J= Unk=	
Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma Middens w/sign :w/o sign

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/Rifle Shells	Blading	Ravens	Other

Prod 70291 560796, 2851212 20-22cm (L) 6792 male  
18cm (w)



(place a 4 X 6 photograph showing the area where the transect was conducted)

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

Parcel No. 3-313, 3-314, 3-315, 3-316

W/GK, JJ, EK, KM, RK

## FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site X Zone of Influence 11 ft from Project Site  
Transect Length: 1 ft Width: 30 ft Other        ft Time 15:30  
Weather: Airtemp at: 5 cm 85.5 °F Surface 97.5 °F Cloud cover        %  
Rainfall 0 in Wind speed 5-8 mph Rainfall in last 30 days        in  
Land Form (e.g., mesa, bajada, wash)         
% Slope: high        low X Aspect N/A Elevation 2030 ft  
Soils Sandy w/ rocks  
Vegetation: dominant perennials Larrea tridentata  
dominant annuals Echismus

Adjacent Land Use: up to 1 mi railroad, freeway, 145,500 sq ft lot, underground water  
Soils \_\_\_\_\_  
Vegetation \_\_\_\_\_

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>
		Shelter Sites			
		Pallet/Burrow/Den Active/Inactive <sup>1</sup>			
A=	J=		<del>     </del> <del>     </del> <del>     </del> <del>     </del>	M=	A= J= Unk= F= Unk=
Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma Middens w/sign :w/o sign

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/ Rifle Shells	Blading	Ravens	Other
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January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

This form should be completed for those transects that contain one or more desert tortoise sign. After the project site and Zone of Influence have been surveyed for tortoise sign, the results from the transect forms should be compiled on a summary form.

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

6796

w/ TT, RK  
KM, GK, EK

Date 2/4/00  
Transect No. \_\_\_\_\_  
State San Bernardino CA  
County San Bernardino  
City Bagslow  
Recorder Glen Kindig  
Address \_\_\_\_\_  
Project Name Solar 6  
Type of Project Phot. solar power site  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 3/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. next to Pigeon's subdivision  
472 (NW corner)

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site X Zone of Influence 1 ft from Project Site 20 acres  
Transect Length: 1 ft Width: 60 ft Other 1 ft Time 1:57  
Weather: Airtemp at: 5 cm 88.7°F Surface 95.1°F Cloud cover 50% (thin, wispy)  
Rainfall \_\_\_\_\_ in Wind speed 2 mph Rainfall in last 30 days \_\_\_\_\_ in  
Land Form (e.g., mesa, bajada, wash) \_\_\_\_\_  
Slope: high \_\_\_\_\_ low X Aspect N/A Elevation 2097 ft  
Soils Sandy  
Vegetation: dominant perennials Larrea tridentata, Ambrosia dumosa

dominant annuals Carissonia, Amisulcia, Chaenactis

Adjacent Land Use: up to 1 mi Transmission lines, rail road, old mining

Soils SAND

Vegetation SAND

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>		
		Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>					
A=	J=		<u>     </u>	M=	A=	J=	Unk=
					F=		

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma w/sign	Middens :w/o sign
					:	

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

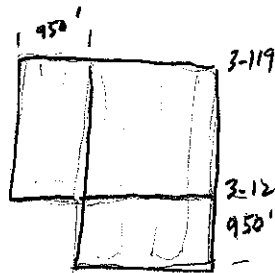
Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/Rifle Shells	Blading	Ravens	Other
X	X		X					

January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

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If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.



Date 4/5/08  
Transect No. 3-119 & 3-120 E  
State \_\_\_\_\_  
County \_\_\_\_\_  
City \_\_\_\_\_  
Recorder TO/RK/PW  
Address \_\_\_\_\_  
Project Name Solar 3  
Type of Project \_\_\_\_\_  
Quadrant Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 1/4 Sec \_\_\_\_\_  
UTM Zone 11  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. \_\_\_\_\_

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site | | Zone of Influence | | \_\_\_\_\_ ft from Project Site  
Transect Length: \_\_\_\_\_ ft Width: 30 ft Other \_\_\_\_\_ ft Time \_\_\_\_\_  
Weather: Airtemp at: 5 cm \_\_\_\_\_ °C Surface \_\_\_\_\_ °C Cloud cover 10 %  
Rainfall 0 in Wind speed 10-15 Rainfall in last 30 days 0 in  
Land Form (e.g., mesa, bajada, wash) \_\_\_\_\_  
% Slope: high 0 low \_\_\_\_\_ Aspect \_\_\_\_\_ Elevation 1819 ft  
Soils \_\_\_\_\_  
Vegetation: dominant perennials Larrea tridentata, Ambrosia dumosa  
dominant annuals Chaenactis steroioides, Malacothrix glabrata

Adjacent Land Use: up to 1 mi

Soils Sandy to gravelly

Vegetation Crocosotebush scrub

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>	
		Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>				
A=	J=			M=	F=	Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma Middens w/sign	Middens :w/o sign

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/Rifle Shells	Blading	Ravens	Other
Yes	Campsites		Glass	Plastic bags and bottles				

January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

This form should be completed for those transects that contain one or more desert tortoise sign. After the project site and Zone of Influence have been surveyed for tortoise sign, the results from the transect forms should be compiled on a summary form.

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

Date 4/5/09  
Transect No. 3-147 3-148 E side  
State CA  
County San Bernardino  
City E of Barstow  
Recorder TB/RK/PW  
Address \_\_\_\_\_  
Project Name Solar 3  
Type of Project Solar  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 3/4 Sec \_\_\_\_\_  
UTM Zone 11  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. \_\_\_\_\_

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site | | Zone of Influence | | \_\_\_\_\_ ft from Project Site  
Transect Length: \_\_\_\_\_ ft Width: 30 ft Other \_\_\_\_\_ ft Time \_\_\_\_\_  
Weather: Airtemp at: 5 cm \_\_\_\_\_ °C Surface \_\_\_\_\_ °C Cloud cover 0 %  
Rainfall 0 in Wind speed 15-25 Rainfall in last 30 days 0 in  
Land Form (e.g., mesa, bajada, wash) \_\_\_\_\_  
& Slope: high 0 low \_\_\_\_\_ Aspect SE Elevation 1815 ft  
Soils \_\_\_\_\_  
Vegetation: dominant perennials Larrea tridentata, Ambrosia dumosa  
dominant annuals Chaenactis steroioides, Malacothrix glabrata, Camissonia claviformis

Adjacent Land Use: up to 1 mi Railroad, I-40 Interstate

Soils Sandy to gravelly

Vegetation Crookeweed scrub

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>	
		Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>				
A=	J=			M=	F=	Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma Middens w/sign	:w/o sign
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SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/Rifle Shells	Blading	Ravens	Other
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Yes | Campsites | Glass | Plastic bags | and bottles

(place a 4 X 6 photograph showing the  
area where the transect was conducted)

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

Date 4/25/08  
 Transect No. \_\_\_\_\_  
 State CA  
 County San Bernardino  
 City Bartlett  
 Recorder Jeff Johnson  
 Address \_\_\_\_\_  
 Project Name SES  
 Type of Project \_\_\_\_\_  
Solar power plant  
 Quad Name 149-152  
 Scale \_\_\_\_\_  
 Site Name \_\_\_\_\_  
 T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
 1/4 Sec \_\_\_\_\_ 1/4 Sec \_\_\_\_\_  
 UTM Zone \_\_\_\_\_  
 Northing \_\_\_\_\_  
 Easting \_\_\_\_\_  
 Parcel No. \_\_\_\_\_

## FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site | | Zone of Influence | | \_\_\_\_\_ ft from Project Site  
Transect Length: \_\_\_\_\_ ft Width: 30 ft Other \_\_\_\_\_ ft Time 10:26 AM  
Weather: Airtemp at: 5 cm \_\_\_\_\_ °C Surface \_\_\_\_\_ °C Cloud cover 10 %  
Rainfall 0 in Wind speed 20-25 Rainfall in last 30 days \_\_\_\_\_ in  
Land Form (e.g., mesa, bajada, wash) braided gravel  
% Slope: high \_\_\_\_\_ low X Aspect N/A Elevation 1862 ft  
Soils Sandy + cobbly  
Vegetation: dominant perennials Larrea tridentata, Ambrosia dumosa  
dominant annuals Chenopodium, Gaevaea

Adjacent Land Use: up to 1 mi Railroad (BNSF) - I-40  
Soils Sandy cobble  
Vegetation Caracalambria

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>
		Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>			
A= 0 J= 0		0/0		M=	A= J= Unk= F= Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	<u>Neotoma</u> w/sign	Middens :w/o sign
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SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/ Rifle Shells	Blading	Ravens	Other
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||||| 1 || 0 || <sup>fires</sup> balloons || 0 || 0 || 0 || 0 || 0

paper

January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

This form should be completed for those transects that contain one or more desert tortoise sign. After the project site and Zone of Influence have been surveyed for tortoise sign, the results from the transect forms should be compiled on a summary form.

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

Date 4/8/2008  
Transect No. 3-173 → 3-176  
State CA  
County San Bernardino  
City Banstrom  
Recorder Jeff Johnson  
Address \_\_\_\_\_  
Project Name SES  
Type of Project solar power plant  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 1/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. \_\_\_\_\_

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site | | Zone of Influence | | \_\_\_\_\_ ft from Project Site  
Transect Length: \_\_\_\_\_ ft Width: 30 ft Other \_\_\_\_\_ ft Time 11:37 AM  
Weather: Airtemp at: 5 cm \_\_\_\_\_ °C Surface \_\_\_\_\_ °C Cloud cover 5%  
Rainfall 0 in Wind speed 20-25 Rainfall in last 30 days \_\_\_\_\_ in  
Land Form (e.g., mesa, bajada, wash) \_\_\_\_\_  
% Slope: high \_\_\_\_\_ low X Aspect NA Elevation 1916 ft  
Soils sandy w/ cobbles  
Vegetation: dominant perennials Larrea tridentata, Ambrosia dumosa  
dominant annuals Gutierrezia, Chenopodium  
Adjacent Land Use: up to 1 mi J-40, BNSF Railroad  
Soils sandy w/ cobbles  
Vegetation Larrea, Ambrosia

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>	Scats <sup>2</sup>	Shell Remains <sup>3</sup>
A=	J=		M=	A= J= Unk= F= Unk=
Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other
				Neotoma Middens w/sign :w/o sign

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash Sites	Dump Sites	Shotgun/Rifle Shells	Blading	Ravens	Other

by pipeline  
R01 J

plates  
cardboard  
plastic  
aluminum cans

January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

This form should be completed for those transects that contain one or more desert tortoise sign. After the project site and Zone of Influence have been surveyed for tortoise sign, the results from the transect forms should be compiled on a summary form.

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

Date 1/15/92 M/D/Y  
Transect No. 3-197 to 3-208  
State CA *Western half*  
County San Bernardino  
City Banana  
Recorder Jeff Johnson  
Address \_\_\_\_\_  
Project Name \_\_\_\_\_  
Type of Project \_\_\_\_\_  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 1/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. \_\_\_\_\_

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site | | Zone of Influence | | \_\_\_\_\_ ft from Project Site  
Transect Length: \_\_\_\_\_ ft Width: 30 ft Other \_\_\_\_\_ ft Time 2:15 pm  
Weather: Airtemp at: 5 cm \_\_\_\_\_ °C Surface \_\_\_\_\_ °C Cloud cover 2 %  
Rainfall 0 in Wind speed 5-10 Rainfall in last 30 days \_\_\_\_\_ in  
Land Form (e.g., mesa, bajada, wash) \_\_\_\_\_  
% Slope: high \_\_\_\_\_ low 2 Aspect NAT Elevation 1889 ft  
Soils Sandy with cobbles  
Vegetation: dominant perennials Larrea tridentata, Ambrosia dumosa

dominant annuals Gerardia stenocephala, Cryptantha sp., Malvastrum glaberrima

Adjacent Land Use: up to 1 mi BAJADA RAILROAD, I-40

Soils Sandy w/ cobbles

Vegetation Larrea / Ambrosia

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>	Scats <sup>2</sup>	Shell Remains <sup>3</sup>
A=	J=	<u>     </u>	M=	A= J= Unk= F= Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma Middens w/sign	Middens w/o sign
					:	/ <u>    </u>

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash Sites	Dump Sites	Shotgun/Rifle Shells	Blading	Ravens	Other

- plastic bottle  
- cardboard  
- plastic grocery bag

January 1992

(place a 4 X 6 photograph showing the  
area where the transect was conducted)

This form should be completed for those  
transects that contain one or more desert  
tortoise sign. After the project site and  
Zone of Influence have been surveyed for  
tortoise sign, the results from the transect  
forms should be compiled on a summary form.

If no tortoise sign occurs on the project site  
or Zone of Influence, the summary form should  
be completed. Please fill in all sections on  
the top 2/3 of the page of the summary form.

M/D/Y  
Date 04/05/08  
Transect No. 3-199 to 3-200  
State California  
County \_\_\_\_\_  
City \_\_\_\_\_  
Recorder JR Charpentier  
Address \_\_\_\_\_  
Project Name Solar 3  
Type of Project Desert tortoise survey  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name Solar 3  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 1/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. \_\_\_\_\_

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site | | Zone of Influence | | \_\_\_\_\_ ft from Project Site  
Transect Length: 1600 ft Width: 30 ft ~~80 ft~~ Other 80 ft Time 1215 WST  
Weather: Airtemp at: 5 cm 85 °F Surface \_\_\_\_\_ °C Cloud cover 0 %  
Rainfall 0 in Wind speed 8-12 Rainfall in last 30 days 0 in  
Land Form (e.g., mesa, bajada, wash) bajada/valley  
% Slope: high \_\_\_\_\_ low \_\_\_\_\_ Aspect W Elevation \_\_\_\_\_ ft  
Soils \_\_\_\_\_  
Vegetation: dominant perennials creosote bush  
dominant annuals \_\_\_\_\_

Adjacent Land Use: up to 1 mi natural open space

Soils \_\_\_\_\_

Vegetation \_\_\_\_\_

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>		
		Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>					
A=	J=			M=	A=	J=	Unk=
					F=		Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma w/sign	Middens :w/o sign
					:	

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/ Rifle Shells	Blading	Ravens	Other
	\							



January 1992

(place a 4 X 6 photograph showing the  
area where the transect was conducted)

This form should be completed for those  
transects that contain one or more desert  
tortoise sign. After the project site and  
Zone of Influence have been surveyed for  
tortoise sign, the results from the transect  
forms should be compiled on a summary form.

If no tortoise sign occurs on the project site  
or Zone of Influence, the summary form should  
be completed. Please fill in all sections on  
the top 2/3 of the page of the summary form.

Date 4/15/08  
Transect No. 3-201 to 3-204  
State Ca  
County San Bernardino  
City Bartlett  
Recorder Jeff Johnson  
Address \_\_\_\_\_  
Project Name SES  
Type of Project Solar power plant  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 3/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. \_\_\_\_\_

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site | | Zone of Influence | | \_\_\_\_\_ ft from Project Site  
Transect Length: \_\_\_\_\_ ft Width: 30 ft Other \_\_\_\_\_ ft Time \_\_\_\_\_  
Weather: Airtemp at: 5 cm \_\_\_\_\_ °C Surface \_\_\_\_\_ °C Cloud cover 0 %  
Rainfall 0 in Wind speed 0-15 Rainfall in last 30 days \_\_\_\_\_ in  
Land Form (e.g., mesa, bajada, wash) bordered gravel  
% Slope: high \_\_\_\_\_ low X Aspect NE Elevation 1921 ft  
Soils sand with cobbles  
Vegetation: dominant perennials Larrea tridentata  
dominant annuals Gouania, Cholla, Stenandrium  
Adjacent Land Use: up to 1 mi I-40  
Soils sand w/ cobbles  
Vegetation Cercocarpus/Amorpha

Corrected Sign	Live Tortoises Adult/Juv.	Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>	Scats <sup>2</sup>	Shell Remains <sup>3</sup>
A=	J=		M=	A= J= Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma Middens w/sign	Middens w/o sign

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/Rifle Shells	Blading	Ravens	Other

plastic  
gray  
chip  
Aluminum  
chip

(place a 4 X 6 photograph showing the area where the transect was conducted)

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

M/D/Y  
Date 04/05/08  
Transect No. 3-225 thru 3-228  
State California  
County \_\_\_\_\_  
City \_\_\_\_\_  
Recorder JP Charpentier  
Address \_\_\_\_\_  
Project Name Solar 3  
Type of Project \_\_\_\_\_  
Desert Trade Area Survey  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name Solar 3  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 1/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. \_\_\_\_\_

Project Site | Zone of Influence | | ft from Project Site  
Transect Length: 1620 ft Width: 30 ft ~~100 ft~~ Other \_\_\_\_\_ ft Time 1000 WST  
Weather: Airtemp at: 5 cm 70 °F Surface \_\_\_\_\_ °C Cloud cover 0 %  
Rainfall 0 in Wind speed 4-7 mph Rainfall in last 30 days 0 in  
Land Form (e.g., mesa, bajada, wash) bajada, valley  
& Slope: high \_\_\_\_\_ low \_\_\_\_\_ Aspect \_\_\_\_\_ Elevation \_\_\_\_\_ ft  
Soils \_\_\_\_\_  
Vegetation: dominant perennials Crotona bush, reed  
dominant annuals Maenatis strobilifera  
Adjacent Land Use: up to 1 mi natural open space, railroad  
Soils \_\_\_\_\_  
Vegetation \_\_\_\_\_

Corrected Sign		Live Tortoises Adult/Juv.	TOTAL NUMBER OF Shelter Sites Pallet/Burrow/Den Active/ <u>Inactive</u> <sup>1</sup>		Scats <sup>2</sup>	Shell Remains <sup>3</sup>
A=		J=	<del>    </del>		M=	A= J= Unk=
					F=	Unk=
Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma w/sign	Middens :w/o sign
					:	
SIGN OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN						
Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/Rifle Shells	Blading Ravens Other

January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

This form should be completed for those transects that contain one or more desert tortoise sign. After the project site and Zone of Influence have been surveyed for tortoise sign, the results from the transect forms should be compiled on a summary form.

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

M/D/Y  
Date 04/05/08  
Transect No. 3-258 to 3-257  
State California  
County \_\_\_\_\_  
City \_\_\_\_\_  
Recorder JE Chaspenier  
Address \_\_\_\_\_  
Project Name Solar 3  
Type of Project Desert tortoise survey  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name Solar 3  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 1/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. \_\_\_\_\_

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site | | Zone of Influence | | \_\_\_\_\_ ft from Project Site  
Transect Length: 1620 ft Width: 30 ft ~~25 ft~~ Other \_\_\_\_\_ ft Time 1500 WST  
Weather: Airtemp at: 5 cm 85 °F Surface \_\_\_\_\_ °C Cloud cover 0 %  
Rainfall 0 in Wind speed 4-7 mph Rainfall in last 30 days 0 in  
Land Form (e.g., mesa, bajada, wash) bajada valley  
% Slope: high \_\_\_\_\_ low \_\_\_\_\_ Aspect \_\_\_\_\_ Elevation \_\_\_\_\_ ft  
Soils \_\_\_\_\_  
Vegetation: dominant perennials creosote bush  
dominant annuals \_\_\_\_\_

Adjacent Land Use: up to 1 mi natural open space, 36 station

Soils \_\_\_\_\_

Vegetation \_\_\_\_\_

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>		
		Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>			A=	J=	Unk=
	A=	J=		M=	F=	Unk=	

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma Middens w/sign	Middens :w/o sign
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SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash Sites	Dump Sites	Shotgun/Rifle Shells	Blading	Ravens	Other
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(place a 4 X 6 photograph showing the area where the transect was conducted)

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

680)

M/D/Y. 4/5/08  
Date 4/5/08  
Transect No. \_\_\_\_\_  
State CA  
County San Bernardino  
City Burgess  
Recorder Glen Kinoshiwa  
Address \_\_\_\_\_  
Project Name Solar 3  
Type of Project \_\_\_\_\_  
\_\_\_\_\_  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
 $\frac{1}{4}$  Sec \_\_\_\_\_  $\frac{1}{4}$  Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. 5-285, 5-286, 5-287, 5-288

Project Site X Zone of Influence 1 \_\_\_\_\_ ft from Project Site 80 acres  
Transect Length: \_\_\_\_\_ ft Width: 30 ft Other \_\_\_\_\_ ft Time 12:47  
Weather: Airtemp at: 5 cm 77.7°F Surface 78.8°F Cloud cover 0 %  
Rainfall 0 in Wind speed 9.10 mph Rainfall in last 30 days \_\_\_\_\_ in  
Land Form (e.g., mesa, bajada, wash) \_\_\_\_\_  
% Slope: high \_\_\_\_\_ low X Aspect N/A (Hgt) Elevation 2065 ft  
Soils sandy w/ cobbles  
Vegetation: dominant perennials Larrea tridentata, Ambrosia dumosa  
dominant annuals Cryptantha, Gerardia

Adjacent Land Use: up to 1 mi

Soils \_\_\_\_\_  
Vegetation \_\_\_\_\_

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>
		Shelter Pallet/Burrow/Den Active/Inactive <sup>1</sup>			
A=	J=			M=	A= J= Unk=
				F=	Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	<u>Neotoma</u> w/sign	Middens :w/o sign
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SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/ Rifle Shells	Blading	Ravens	Other
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(place a 4 X 6 photograph showing the area where the transect was conducted)

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

M/D/Y  
Date 04/06/08  
Transect No. G-409 to G-412  
State \_\_\_\_\_  
County \_\_\_\_\_  
City \_\_\_\_\_  
Recorder JP Charpentier  
Address \_\_\_\_\_  
Project Name \_\_\_\_\_  
Type of Project Desert tortoise survey  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
 $\frac{1}{4}$  Sec \_\_\_\_\_  $\frac{1}{4}$  Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. \_\_\_\_\_

## FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site || Zone of Influence || \_\_\_\_\_ ft from Project Site  
Transect Length: 620 ft Width: 30 ft Other \_\_\_\_\_ ft Time 1305 wst  
Weather: Airtemp at: 5 cm 30.5° Surface \_\_\_\_\_°C Cloud cover 0%  
Rainfall 0 in Wind speed 9-12 mph Rainfall in last 30 days 0 in  
Land Form (e.g., mesa, bajada, wash) bajada, valley  
% Slope: high \_\_\_\_\_ low \_\_\_\_\_ Aspect \_\_\_\_\_ Elevation \_\_\_\_\_ ft  
Soils \_\_\_\_\_  
Vegetation: dominant perennials Screw bean bush  
dominant annuals \_\_\_\_\_

Adjacent Land Use: up to 1 mi I-40, railroad, underground pipeline, electrical transmission line

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>
		Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>			
A=	J=			M=	A= J= Unk=
				F=	Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	<u>Neotoma</u> w/sign	Middens :w/o sign
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SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/ Rifle Shells	Blading	Ravens	Other
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w/ Mark  
Wang

M/D/Y  
Date 4/6/08  
Transect No. \_\_\_\_\_  
State CA  
County San Bernardino  
City Bardonia  
Recorder John L. Smith  
Address \_\_\_\_\_  
Project Name Solar 6  
Type of Project \_\_\_\_\_  
phot. solar power site  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 1/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. 6-513, 6-514, 6-515, 6-516

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

6827

FORM FOR ~~PRESENCE-OR-ABSENCE~~ AND CLEARANCE SURVEYS

Project Site X Zone of Influence | | \_\_\_\_\_ ft from Project Site 80 acres  
Transect Length: 1900 ft : Width: 30 ft Other \_\_\_\_\_ ft Time 9:20  
Weather: Airtemp at: 5 cm 66.7 °F Surface 66.2 °F Cloud cover 0 %  
Rainfall 0 in Wind speed 6-10 mph Rainfall in last 30 days 0 in  
Land Form (e.g., mesa, bajada, wash) \_\_\_\_\_  
% Slope: high X low \_\_\_\_\_ Aspect S facing Elevation 2553 ft  
Soils sand w/ pebbles  
Vegetation: dominant perennials Larrea tridentata Ambrosia dumosa

dominant annuals Camissonia, Cheiranthus & desert dandelion  
Schismus

Adjacent Land Use: up to 1 mi radio tower, transmission line / underground pipeline  
Soils 9.9a/c  
Vegetation 9.9a/c

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>
		Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>			
A=	J=			M=	A=    J= Unk=
				F=	Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	<u>Neotoma</u> w/sign	Middens :w/o sign
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SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN								
Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/ Rifle Shells	Blading	Ravens	Other

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466
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January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

This form should be completed for those transects that contain one or more desert tortoise sign. After the project site and Zone of Influence have been surveyed for tortoise sign, the results from the transect forms should be compiled on a summary form.

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

6839

w/111

Date 4/1/00 M/D/Y  
Transect No. \_\_\_\_\_  
State CA  
County San Bernardino  
City Boulevard  
Recorder Gina Kinoshita  
Address \_\_\_\_\_  
Project Name Solar  
Type of Project Phot. Solar power site  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 3/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. 6-547, 6-548, 6-549, 6-550

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site X Zone of Influence \_\_\_\_\_ ft from Project Site  
Transect Length: \_\_\_\_\_ ft Width: 30 ft Other \_\_\_\_\_ ft Time 13:00  
Weather: Airtemp at: 5 cm 79.4 °F Surface 82.0 °F Cloud cover 5 %  
Rainfall 0 in Wind speed 5-7 mph Rainfall in last 30 days \_\_\_\_\_ in  
Land Form (e.g., mesa, bajada, wash) rolling hills  
Slope: high x low \_\_\_\_\_ Aspect 9 facing Elevation 2419 ft  
Soils sandy w/ pebbles  
Vegetation: dominant perennials Larrea tridentata, Krameria, Ambrosia dumosa  
dominant annuals Amaranthus, Hirschfeldia incana, Schismus

80 a.k.s

Adjacent Land Use: up to 1 mi radio tower, underground pipelines, freeway  
Soils sandy  
Vegetation sandy

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>
		Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>			
A=	J=			A=	J= Unk=
			M=	F=	Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma Middens w/sign	Middens :w/o sign
					:	

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/Rifle Shells	Blading	Ravens	Other

HC nest in this quad

January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

This form should be completed for those transects that contain one or more desert tortoise sign. After the project site and Zone of Influence have been surveyed for tortoise sign, the results from the transect forms should be compiled on a summary form.

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

Date 4/6/08  
Transect No. \_\_\_\_\_  
State NV  
County \_\_\_\_\_  
City \_\_\_\_\_  
Recorder Kalk  
Address \_\_\_\_\_  
Project Name Solar 6  
Type of Project Desert Waste Survey  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 3/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. 6-397,398,399,400

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site | | Zone of Influence | | \_\_\_\_\_ ft from Project Site  
Transect Length: \_\_\_\_\_ ft Width: 30 ft Other \_\_\_\_\_ ft Time \_\_\_\_\_  
Weather: Airtemp at: 5 cm \_\_\_\_\_ °C Surface \_\_\_\_\_ °C Cloud cover 0 %  
Rainfall None Wind speed 15-25 Rainfall in last 30 days \_\_\_\_\_ in  
Land Form (e.g., mesa, bajada, wash) \_\_\_\_\_  
% Slope: high \_\_\_\_\_ low \_\_\_\_\_ Aspect \_\_\_\_\_ Elevation \_\_\_\_\_ ft  
Soils \_\_\_\_\_  
Vegetation: dominant perennials Croton, desert dandelion  
dominant annuals \_\_\_\_\_

Adjacent Land Use: up to 1 mi Railroad power Transmission lines  
Soils Sandy small to medium boulders  
Vegetation \_\_\_\_\_

Corrected Sign	Live Tortoises		TOTAL NUMBER OF Shelter Sites		Scats <sup>2</sup>	Shell Remains <sup>3</sup>	W 250mm x 150mm x 1/4" 001 0558287 / 3850920 Photo # 360	
	Adult	Juv.	Pallet/Burrow/Den	Active/Inactive <sup>1</sup>				
	A=	J=			M=	F=	Unk=	W 250mm x 150mm x 1/4" 002 0558261 / 3850899 Photo # 299
Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma w/sign	Middens :w/o sign		3 scats Tracks in burrow
Burrow								
SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN								
Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/Rifle Shells	Blading	Ravens	Other
0	6	0	CONS	2	0			

Inactive Tortoise  
11

See reverse

4 scat inside  
1 outside



(place a 4 X 6 photograph showing the area where the transect was conducted)

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

M/D/Y  
Date 04/06/08  
Transect No. 6-409 to 6-412  
State 6-373-6-376  
County \_\_\_\_\_  
City \_\_\_\_\_  
Recorder JP Charpentier  
Address \_\_\_\_\_  
Project Name Solar 6  
Type of Project Desert tortoise survey  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
 $\frac{1}{4}$  Sec \_\_\_\_\_  $\frac{3}{4}$  Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. \_\_\_\_\_

Project Site | | Zone of Influence | | ft from Project Site  
Transect Length: 1620 ft Width: 30 ft Other \_\_\_\_\_ ft Time 0948 WST  
Weather: Airtemp at: 5 cm 80.5°F Surface \_\_\_\_\_ °C Cloud cover 8 %  
Rainfall 0 in Wind speed 8-12 mph Rainfall in last 30 days 0 in  
Land Form (e.g., mesa, bajada, wash) bajada valley  
% Slope: high \_\_\_\_\_ low \_\_\_\_\_ Aspect \_\_\_\_\_ Elevation \_\_\_\_\_ ft  
Soils \_\_\_\_\_  
Vegetation: dominant perennials creosote bush  
dominant annuals \_\_\_\_\_

Adjacent Land Use: up to 1 mi Interstate 40, underground gas line, electrical transmission  
Soils \_\_\_\_\_  
Vegetation \_\_\_\_\_  
line,  
railroad

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>
		Shelter Sites Pallet/Burrow/Den Active/ <u>Inactive</u> <sup>1</sup>			
A=	J=	<del>    </del>		M=	A= J= Unk= F= Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	<u>Neotoma</u> w/sign	Middens :w/o sign
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SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/ Rifle Shells	Blading	Ravens	Other
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|| 11 || ~~11~~ || 11 || || 1 || || 1 ||

January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

This form should be completed for those transects that contain one or more desert tortoise sign. After the project site and Zone of Influence have been surveyed for tortoise sign, the results from the transect forms should be compiled on a summary form.

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

Date 4/6/08 M/D/Y  
Transect No. W of 6-477 to 6-480  
State CA  
County San Bernardino  
City Barstow  
Recorder Jeff Schaner  
Address \_\_\_\_\_  
Project Name SES  
Type of Project Solar power  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 3/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. \_\_\_\_\_

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site | | Zone of Influence | | \_\_\_\_\_ ft from Project Site  
Transect Length: \_\_\_\_\_ ft Width: 30 ft Other \_\_\_\_\_ ft Time 12:10 pm  
Weather: Airtemp at: 5 cm \_\_\_\_\_ °C Surface \_\_\_\_\_ °C Cloud cover 0 %  
Rainfall 0 in Wind speed 10-15 Rainfall in last 30 days \_\_\_\_\_ in  
Land Form (e.g., mesa, bajada, wash) flat  
Slope: high \_\_\_\_\_ low X Aspect NA Elevation 2222 ft  
Soils Sandy w/ cobbles  
Vegetation: dominant perennials Larrea tridentata, Ambrosia dumosa  
dominant annuals Malacothrix glabrata, Schismus arabicus, Chenopodium  
Adjacent Land Use: up to 1 mi I-40, BNSF railroad  
Soils Sandy w/ cobbles  
Vegetation Larrea / ambrosia

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>
		Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>			
A=	J=	/ <del>    </del>		A=	J=
M=	F=			M=	F=
Unk=				Unk=	

Tracks Eggshell Fragments Drinking Sites Courtship Rings Other Neotoma Middens w/sign :w/o sign

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/Rifle Shells	Blading	Ravens	Other
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plastic bagging  
beer cans  
bottles

January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

This form should be completed for those transects that contain one or more desert tortoise sign. After the project site and Zone of Influence have been surveyed for tortoise sign, the results from the transect forms should be compiled on a summary form.

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

M/D/Y  
Date 4/6/08  
Transect No. 6-445 to South  
State CA  
County San Bernardino  
City Burton  
Recorder Jeff Johnson  
Address   
Project Name SES  
Type of Project Solar Power  
Quad Name   
Scale   
Site Name   
T  R  Sec   
1/4 Sec  1/4 Sec   
UTM Zone   
Northing   
Easting   
Parcel No.

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site | | Zone of Influence | |        ft from Project Site  
Transect Length:        ft Width: 30 ft Other        ft Time 9:30 am  
Weather: Airtemp at: 5 cm        °C Surface        °C Cloud cover 0 %  
Rainfall 0 in Wind speed 10-15 Rainfall in last 30 days        in  
Land Form (e.g., mesa, bajada, wash) FLAT  
% Slope: high        low X Aspect NA Elevation 2258 ft  
Soils Sandy w/ cobbles  
Vegetation: dominant perennials Larrea tridentata / Pleurophis rigida  
dominant annuals Mentzelia albicaulis / Argemone mexicana  
Adjacent Land Use: up to 1 mi Formerly grazed  
Soils Sandy w/ cobbles  
Vegetation Larrea / Pleurophis

TOTAL NUMBER OF	
Corrected Sign	Live Tortoises Adult/Juv.

TOTAL NUMBER OF	
Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>	Scats <sup>2</sup> Shell Remains <sup>3</sup>

A= J= M= F= Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma Middens w/sign	Middens w/o sign

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash Sites	Dump Sites	Shotgun/Rifle Shells	Blading	Ravens	Other

Shed cobbles  
mylar  
balloon  
plastic bag  
SS gel  
drum

January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

This form should be completed for those transects that contain one or more desert tortoise sign. After the project site and Zone of Influence have been surveyed for tortoise sign, the results from the transect forms should be compiled on a summary form.

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

M/P/Y  
Date 4/6  
Transect No. 46  
State NV  
County \_\_\_\_\_  
City \_\_\_\_\_  
Recorder Karen  
Address \_\_\_\_\_  
Project Name Sibal  
Type of Project Desert Tortoise Survey  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 1/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. 16-369,370,371,372

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site | | Zone of Influence | | \_\_\_\_\_ ft from Project Site  
Transect Length: \_\_\_\_\_ ft Width: 30 ft Other \_\_\_\_\_ ft Time \_\_\_\_\_  
Weather: Airtemp at: 5 cm \_\_\_\_\_ °C Surface \_\_\_\_\_ °C Cloud cover 0 %  
Rainfall 0 in Wind speed 15/25 Rainfall in last 30 days \_\_\_\_\_ in  
Land Form (e.g., mesa, bajada, wash) \_\_\_\_\_  
% Slope: high \_\_\_\_\_ low \_\_\_\_\_ Aspect \_\_\_\_\_ Elevation \_\_\_\_\_ ft  
Soils Sandy small to med cobbles  
Vegetation: dominant perennials creosote  
dominant annuals \_\_\_\_\_

Adjacent Land Use: up to 1 mi Railroad, power transmission lines  
Soils \_\_\_\_\_  
Vegetation \_\_\_\_\_

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>			
		Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>						
A=	J=			M=	F=	A=	J=	Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma Middens w/sign	Middens w/o sign
					:	:

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/Rifle Shells	Blading	Ravens	Other

Black Tail Jack Rabbit!

ACTIVE  
BACK CAT  
BROWN

|||||  
|||||

Fox Burrows  
Burrow complexes

|||

Tortoise  
Burrows

(place a 4 X 6 photograph showing the  
area where the transect was conducted)

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

M/D/Y  
Date 4/5/08  
Transect No. \_\_\_\_\_  
State CA  
County San Bernardino  
City Banbury  
Recorder Glen Kindelstein  
Address \_\_\_\_\_  
Project Name Golen 3  
Type of Project ref.  
golen power site  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
 $\frac{1}{4}$  Sec \_\_\_\_\_  $\frac{3}{4}$  Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. 227, 3-214, 3-214, 3-220

FORM FOR ~~PRESENCE OR ABSENCE~~ AND CLEARANCE SURVEYS

Project Site X Zone of Influence 1 | 1 ft from Project Site 80 acres  
Transect Length:        ft Width: 30 ft Other 40 ft Time 9:15  
Weather: Airtemp at: 5 cm 65.5 °F Surface 65.9 °F Cloud cover 0 %  
Rainfall 0 in Wind speed 15-30 mph Rainfall in last 30 days        in  
Land Form (e.g., mesa, bajada, wash)         
% Slope: high        low X Aspect A/A Elevation 1051 ft  
Soils         
Vegetation: dominant perennials Lawson tridentata  
dominant annuals Chaenactis

**Adjacent Land Use:** up to 1 mi

## Soils

## Vegetation

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>
		Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>			
A=	J=				A= J= Unk=
				M=	F= Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma w/sign	Middens :w/o sign
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SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN							
Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/ Rifle Shells	Blading	Ravens Other

January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

This form should be completed for those transects that contain one or more desert tortoise sign. After the project site and Zone of Influence have been surveyed for tortoise sign, the results from the transect forms should be compiled on a summary form.

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

M/D/Y  
Date 4/15/08  
Transect No. \_\_\_\_\_  
State CA  
County San Bernardino  
City Buena Vista  
Recorder \_\_\_\_\_  
Address \_\_\_\_\_  
Project Name Solar 1  
Type of Project \_\_\_\_\_  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 3/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. 1-1, 1-2, 1-3, 1-4  
W/ Chris Fine Stover  
+ Rodolfo Avila

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site ☒ Zone of Influence ☒ \_\_\_\_\_ ft from Project Site  
Transect Length: 1900 ft Width: 30 ft Other \_\_\_\_\_ ft Time 10:00am  
Weather: Airtemp at: 5 cm 69.7 °F Surface 69.7 °F Cloud cover 50 %  
Rainfall 0 in Wind speed 15-25 mph Rainfall in last 30 days \_\_\_\_\_ in  
Land Form (e.g., mesa, bajada, wash) wash  
Slope: high \_\_\_\_\_ low ☒ Aspect S facing Elevation 2019 ft  
Soils Gandy w/ rocks  
Vegetation: dominant perennials Larrea tridentata, Ambrosia dumosa  
dominant annuals Schizanthus, Chamaecrista

Adjacent Land Use: up to 1 mi roads, mine (3)

Soils sand

Vegetation sand

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>		
		Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>					
A=	J=			M=	A=	J=	Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma Middens w/sign	Middens :w/o sign
						none

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/Rifle Shells	Blading	Ravens	Other
Y	N	N	N	N	N	N	N	N

noting horned larks ~ 4 pairs

(place a 4 X 6 photograph showing the area where the transect was conducted)

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

LB53

M/D/Y  
Date 4/15/08  
Transect No. \_\_\_\_\_  
State CA  
County San Bernardino  
City Redland  
Recorder Glen Kinoshita  
Address \_\_\_\_\_  
Project Name \_\_\_\_\_  
Type of Project \_\_\_\_\_  
\_\_\_\_\_  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
 $\frac{1}{2}$  Sec \_\_\_\_\_  $\frac{1}{4}$  Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. 1-29, 1-30, 1-31, 1-32  
W.L. Starob, Avila  
Christine Starob, Redland  
Avila

## FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site X Zone of Influence                      ft from Project Site  
Transect Length: 1900 ft Width: 30 ft Other              ft Time 12:11  
Weather: Airtemp at: 5 cm 74.6 °F Surface 82.0 °F Cloud cover 0 %  
Rainfall 0 in Wind speed 10-25 mph Rainfall in last 30 days              in  
Land Form (e.g., mesa, bajada, wash)                       
% Slope: high              low X Aspect G-facing Elevation 2053 ft  
Soils sandy w/ rock  
Vegetation: dominant perennials Larrea tridentata  
dominant annuals Eriogonum, Gilia

Adjacent Land Use: up to 1 mi

## Soils

## Vegetation

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>
		Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>			
A=	J=			M=	A= J= Unk=
				F=	Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	<u>Neotoma</u> w/sign	Middens :w/o sign
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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466
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SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/ Rifle Shells	Blading	Ravens	Other
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11

(place a 4 X 6 photograph showing the  
area where the transect was conducted)

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

note:  
no pics for  
burrows  
shell remains -  
pics need  
to #ed.

M/D/Y  
Date 4/15/05  
Transect No. \_\_\_\_\_  
State CA  
County San Benito  
City Dakota  
Recorder Denise Turner  
Address \_\_\_\_\_  
Project Name \_\_\_\_\_  
Type of Project Solar

Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
 $\frac{1}{4}$  Sec \_\_\_\_\_  $\frac{1}{4}$  Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. 193, 94, 95, 96

W/Perrywood, Pearce TN  
Tim

## FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

dominant annuals *Crotalaria*, *Andropogon*, *Cassia armata*, *Hypochaeris*, *Ephedra*,  
desert dandelion *Gutierrezia* spp. *Pectocarya* spp. *Schizanthus*

Soils sandy loam  
Vegetation

Male Remains  
Sr. MCL: Known  
WP91  
0548805  
3857133  
sub adult  
CLYVTSO

87 male Puma  
5932 MCL: 235 mm  
6865 adults 1201  
- < 1 yr TSD

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1. Active burrow WP88  
0548911 E 1 sat  
3857298 N inside

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/ Rifle Shells	Blading	Ravens	Other
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4. Active burrow  
Scat, tracks inside  
wp. 092  
0548941  
3856923

5. Active Burrows  
tracks inside  
WP 093  
0548758  
3857027

G. Active Bureau  
scat inside  
W 094  
0548708  
3857017

LIVE  
i. WP90  
0548898  
3857156  
adult size 2  
Male?



January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

This form should be completed for those transects that contain one or more desert tortoise sign. After the project site and Zone of Influence have been surveyed for tortoise sign, the results from the transect forms should be compiled on a summary form.

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

Date 4/15/08  
Transect No. 9  
State CA  
County SAN BENITO  
City \_\_\_\_\_  
Recorder \_\_\_\_\_  
Address \_\_\_\_\_  
Project Name \_\_\_\_\_  
Type of Project \_\_\_\_\_  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 3/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. 1-125, 126, 127, 128

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site X Zone of Influence | | \_\_\_\_\_ ft from Project Site  
Transect Length: 1900 ft Width: 40 ft Other \_\_\_\_\_ ft Time 9:00 AM  
Weather: Airtemp at: 5 cm \_\_\_\_\_ °C Surface \_\_\_\_\_ °C Cloud cover \_\_\_\_\_ %  
Rainfall 0 in Wind speed 130 Rainfall in last 30 days \_\_\_\_\_ in  
Land Form (e.g., mesa, bajada, wash) \_\_\_\_\_

% Slope: high \_\_\_\_\_ low X Aspect \_\_\_\_\_ Elevation \_\_\_\_\_ ft  
Soils \_\_\_\_\_  
Vegetation: dominant perennials \_\_\_\_\_

creosote, AMDU, Cassia armata, HYSA, Ephedra spp.  
dominant annuals Cryptantha spp., Pectocarya spp., Schismus  
desert dandelion

Adjacent Land Use: up to 1 mi \_\_\_\_\_

Soils sandy loam  
Vegetation \_\_\_\_\_

Corrected Sign \_\_\_\_\_ Live Tortoises Adult/Juv. \_\_\_\_\_ TOTAL NUMBER OF Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup> \_\_\_\_\_ Scats <sup>2</sup> \_\_\_\_\_ Shell Remains <sup>3</sup> \_\_\_\_\_  
Carcass  
1. bone fragments 24 yr TSC  
WP084: 0549623 E  
(Denise) 3856055N

A= \_\_\_\_\_ J= \_\_\_\_\_ I= III A= VI M= \_\_\_\_\_ F= \_\_\_\_\_ Unk= 1 Active burrow  
1. With 4 scat, WP85  
0549639 E  
3856094 N

Tracks \_\_\_\_\_ Eggshell Fragments \_\_\_\_\_ Drinking Sites \_\_\_\_\_ Courtship Rings \_\_\_\_\_ Other \_\_\_\_\_ Neotoma Middens w/sign \_\_\_\_\_ :w/o sign \_\_\_\_\_

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN  
Tire Tracks \_\_\_\_\_ Human Footprints \_\_\_\_\_ Dog Sign \_\_\_\_\_ Trash \_\_\_\_\_ Dump Sites \_\_\_\_\_ Shotgun/Rifle Shells \_\_\_\_\_ Blading \_\_\_\_\_ Ravens \_\_\_\_\_ Other \_\_\_\_\_

(place a 4 X 6 photograph showing the area where the transect was conducted)

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

M/D/Y  
Date 4/16/08  
Transect No. \_\_\_\_\_  
State CA  
County San Bernardino  
City \_\_\_\_\_  
Recorder Rachel Avila  
Address \_\_\_\_\_  
Project Name Solow 1  
Type of Project Solow  
Desert Tortoise survey  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name Solow 1  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
 $\frac{1}{4}$  Sec \_\_\_\_\_  $\frac{3}{4}$  Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. 1-25, 26, 27, 28

## FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site | | Zone of Influence | | \_\_\_\_\_ ft from Project Site  
Transect Length: 1900 ft : Width: 30 ft 20 m other \_\_\_\_\_ ft Time 8:50  
Weather: Airtemp at: 5 cm \_\_\_\_\_ °C Surface \_\_\_\_\_ °C Cloud cover 0 %  
Rainfall \_\_\_\_\_ in Wind speed 5 mph Rainfall in last 30 days \_\_\_\_\_ in  
Land Form (e.g., mesa, bajada, wash) \_\_\_\_\_  
% Slope: high \_\_\_\_\_ low ✓ Aspect \_\_\_\_\_ Elevation \_\_\_\_\_ ft  
Soils Sandy loam, rock  
Vegetation: dominant perennials AMDU, LATR, SPP - Atriplex lepicium-SPP  
Schismus SPP  
dominant annuals Chenacthus, Cryptantha

Adjacent Land Use: up to 1 mi Railroad, freeway

## Soils

## Vegetation

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>
		Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>			
A=	J=			M=	A= J= Unk=
				F=	Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	<u>Neotoma</u> w/sign	Middens :w/o sign
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SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/ Rifle Shells	Blading	Ravens	Other
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January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

This form should be completed for those transects that contain one or more desert tortoise sign. After the project site and Zone of Influence have been surveyed for tortoise sign, the results from the transect forms should be compiled on a summary form.

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0117

Date 4/16/08  
Transect No. \_\_\_\_\_  
State CA  
County San Bernardino  
City Ludlow  
Recorder Glen Kinoshita  
Address \_\_\_\_\_  
Project Name Solar 6  
Type of Project Int. solar power site  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 3/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. 6-531, 534, 535, 536  
W/kinship

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site ☒ Zone of Influence ☐ \_\_\_\_\_ ft from Project Site  
Transect Length: 1000 ft Width: 80 ft Other \_\_\_\_\_ ft Time 12:45 pm  
Weather: Airtemp at: 5 cm 94.7 °F Surface 99.2 °F Cloud cover 10 %  
Rainfall 0 in Wind speed 1-14 mph Rainfall in last 30 days \_\_\_\_\_ in  
Land Form (e.g., mesa, bajada, wash) bajada  
% Slope: high \_\_\_\_\_ low x Aspect S facing Elevation 2510 ft  
Soils sandy loam w/ rocks  
Vegetation: dominant perennials Larrea tridentata, Ambrosia dumosa  
dominant annuals Amorpha, plantago, Schismus

Adjacent Land Use: up to 1 mi radio tower, transmission lines, underground pipeline  
Soils same  
Vegetation same

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>	Scats <sup>2</sup>	Shell Remains <sup>3</sup>
A=	J=		M=	F=
Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other
				Neotoma Middens w/sign :w/o sign

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/Rifle Shells	Blading	Ravens	Other

TORT 1 562294 3847021 ~ 17" MCL 0131 in burrow  
TORT 2 562275 3847110 in burrow 0135

January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

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0108

M/D/Y  
Date 4/17/00  
Transect No. 1  
State CA  
County San Bernardino  
City Ludlow  
Recorder Glen K. Ingham  
Address \_\_\_\_\_  
Project Name Solarb  
Type of Project Phot. Solar  
power site  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 1/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. 6-549,590,99,551

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site X Zone of Influence 1 ft from Project Site  
Transect Length: 1900 ft Width: 30 ft Other \_\_\_\_\_ ft Time 11:04  
Weather: Airtemp at: 5 cm 71.3 °F Surface 75.2 °F Cloud cover 0 %  
Rainfall 0 in Wind speed 1-3 mph Rainfall in last 30 days \_\_\_\_\_ in  
Land Form (e.g., mesa, bajada, wash) \_\_\_\_\_  
% Slope: high \_\_\_\_\_ low X Aspect S-facing Elevation 2530 ft  
Soils sandy w/ rocks  
Vegetation: dominant perennials Larrea tridentata  
dominant annuals Amaranthus, Setaria  
Adjacent Land Use: up to 1 mi Transmission line, underground pipeline, radio tower  
Soils sandy  
Vegetation sandy

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>	
		Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>				
A=	J=			M=	F=	Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma Middens w/sign	Middens :w/o sign

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN							
Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/Rifle Shells	Blading	Ravens Other

(place a 4 X 6 photograph showing the  
area where the transect was conducted)

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

M/D/Y  
Date 4/12/08  
Transect No. \_\_\_\_\_  
State CA  
County San Bernardino  
City Ludlow  
Recorder Allen Kinosaki  
Address \_\_\_\_\_  
Project Name Solar 6  
Type of Project \_\_\_\_\_  
\_\_\_\_\_  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
 $\frac{1}{4}$  Sec \_\_\_\_\_  $\frac{3}{4}$  Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. 6-573, 574, 575, 576  
w/ 7.1 A Sect, Benise Tu

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site ☒ Zone of Influence \_\_\_\_\_ ft from Project Site  
Transect Length: 190 ft Width: 30 ft Other \_\_\_\_\_ ft Time 1120 am  
Weather: Airtemp at: 5 cm 69.8 °F Surface 79.8 °F Cloud cover 0 %  
Rainfall 0 in Wind speed 10-15 Rainfall in last 30 days — in  
Land Form (e.g., mesa, bajada, wash) \_\_\_\_\_  
% Slope: high \_\_\_\_\_ low X Aspect \_\_\_\_\_ Elevation 2470 ft  
Soils sandy loam w/ rocks  
Vegetation: dominant perennials Curatella bicolor  
dominant annuals Amaranthus, Erodium

Adjacent Land Use: up to 1 mi underground pipeline, transmission line

Soils Sand  
Vegetation 954

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>
		Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>			
A=	J=		<del>     </del> 	M=	A= J= Unk= F= Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	<u>Neotoma</u> w/sign	Middens :w/o sign
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SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/ Rifle Shells	Blading	Ravens	Other
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(place a 4 X 6 photograph showing the area where the transect was conducted)

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0101, 0102

Parcel No. 6-569, 570, 571, 572  
w/ Till Seed Denise Tu

Project Site ☒ Zone of Influence ☐ \_\_\_\_\_ ft from Project Site  
Transect Length: 1900 ft Width: 30 ft Other \_\_\_\_\_ ft Time 907 am  
Weather: Airtemp at: 5 cm 62.2° F Surface 63.3° F Cloud cover 0 %  
Rainfall 0 in Wind speed 5-Bu mph Rainfall in last 30 days - in  
Land Form (e.g., mesa, bajada, wash) wash on alluvial fan  
% Slope: high \_\_\_\_\_ low ☒ Aspect S-facing Elevation 2481 ft  
Soils granitic loam w/ rocks  
Vegetation: dominant perennials Larrea tridentata

dominant annuals Mustard, Eriogonum, Amaranth

Adjacent Land Use: up to 1 mi transmission line, underground pipeline

Soils same  
Vegetation same

Corrected Sign	Live Tortoises Adult/Juv.	Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>	Scats <sup>2</sup>	Shell Remains <sup>3</sup>
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MCL: 240 mm

|| A= J= || ~~|||||~~ || A= J= Unk=  
M= F= Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma w/sign	Middens :w/o sign
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Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/ Rifle Shells	Blading	Ravens	Other
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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466
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January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

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0104

Date 4/17/00  
Transect No. \_\_\_\_\_  
State CA  
County San Bernardino  
City Ludlow  
Recorder Glen Kinoshita  
Address \_\_\_\_\_  
Project Name Solar 6  
Type of Project Power site  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 3/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. 6-969, 566, 567, 568

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site X Zone of Influence | | \_\_\_\_\_ ft from Project Site  
Transect Length: 1900 ft Width: 20 ft Other \_\_\_\_\_ ft Time 09:00  
Weather: Airtemp at: 5 cm 70.7 °F Surface 72.2 °F Cloud cover 0 %  
Rainfall 0 in Wind speed 2-4 mph Rainfall in last 30 days \_\_\_\_\_ in  
Land Form (e.g., mesa, bajada, wash) sides of mountain  
% Slope: high X low \_\_\_\_\_ Aspect S-facing Elevation 2607 ft  
Soils sandy loam (base), volcanic rock (mountain)  
Vegetation: Dominant perennials Carrot-tidicator  
dominant annuals Ambrosia, Plantago, Solisima

Adjacent Land Use: up to 1 mi underground pipeline, transmission line  
Soils sandy loam / rocks  
Vegetation same

		TOTAL NUMBER OF			
Corrected Sign	Live Tortoises Adult/Juv.	Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>	Scats <sup>2</sup>	Shell Remains <sup>3</sup>	
	A= J=		M= F=	A= J= Unk=	
Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma Middens w/sign :w/o sign

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks Human Footprints Dog Sign Trash Dump Sites Shotgun/ Rifle Shells Blading Ravens Other

w/ Denise Tu, Rachel Avila

(place a 4 X 6 photograph showing the  
area where the transect was conducted)

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

M/D/Y 4/12/00  
Date 4/12/00  
Transect No. \_\_\_\_\_  
State CA  
County San Bernardino  
City Ludlow  
Recorder Glenn Kinoshita  
Address \_\_\_\_\_  
Project Name Solar  
Type of Project Solar  
paravite  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 3/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. 4557, 558, 559, 560  
w/ Jill Seed, Denise Kin

## FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site |X| Zone of Influence | | ft from Project Site  
Transect Length: 1900 ft : Width: 30 ft Other \_\_\_\_\_ ft Time 1:51 pm  
Weather: Airtemp at: 5 cm 72.2 °F Surface 77.4 °F Cloud cover \_\_\_\_\_ %  
Rainfall 0 in Wind speed 5-8 mph Rainfall in last 30 days \_\_\_\_\_ in  
Land Form (e.g., mesa, bajada, wash) \_\_\_\_\_  
% Slope: high \_\_\_\_\_ low X Aspect S facing Elevation \_\_\_\_\_ ft  
Soils sandy loam w/ rocks  
Vegetation: dominant perennials Hillmania, Larrea tridentata  
dominant annuals Amaranthus, Schismus, Eriogonum

Adjacent Land Use: up to 1 mi. underground pipeline, transmission line  
Soils same  
Vegetation same

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>
		Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>			
A=	J=		<del>     </del>	M=	A= J= Unk=
				F=	Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma w/sign	Middens :w/o sign
					:	

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/ Rifle Shells	Blading	Ravens	Other
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(place a 4 X 6 photograph showing the area where the transect was conducted)

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

M/D/Y  
Date 2/17/03  
Transect No. \_\_\_\_\_  
State CA  
County San Bernardino  
City Indio  
Recorder Alan Kinschilton  
Address \_\_\_\_\_  
Project Name Solar 6  
Type of Project Pot. solar  
power site  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 1/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. 6-553, 554, 555, 556  
w/ Denise Tr, Rachel Butler

Adjacent Land Use: up to 1 mi radio tower, underground pipeline, transmission lines  
Soils same  
Vegetation same

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>
		Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>			
A=	J=		<del>    </del>		A=   J= Unk=
				M=	F=   Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma w/sign	Middens :w/o sign
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Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/ Rifle Shells	Blading	Ravens	Other
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\_\_\_\_\_

6-429-6-433

January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

This form should be completed for those transects that contain one or more desert tortoise sign. After the project site and Zone of Influence have been surveyed for tortoise sign, the results from the transect forms should be compiled on a summary form.

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

M/D/Y  
Date 4/17/08  
Transect No. \_\_\_\_\_  
State CA  
County San Bernardino  
City Barstow  
Recorder BB  
Address \_\_\_\_\_  
Project Name Solar ~~6~~  
Type of Project presence/absence  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 3/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. \_\_\_\_\_

w/ Peggy Wood

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site X Zone of Influence 1 ft from Project Site  
Transect Length: 100 ft Width: 30 ft Other \_\_\_\_\_ ft Time 0955  
Weather: Airtemp at: 5 cm \_\_\_\_\_ °C Surface \_\_\_\_\_ °C Cloud cover 0 %  
Rainfall 0 in Wind speed \_\_\_\_\_ Rainfall in last 30 days 0 in  
Land Form (e.g., mesa, bajada, wash) \_\_\_\_\_  
% Slope: high \_\_\_\_\_ low ✓ Aspect \_\_\_\_\_ Elevation 2384 ft  
Soils sandy loam, sandy gravel & cobble  
Vegetation: dominant perennials LATR, AMDU, ENFR, Pencil cholla, Beavertail  
HVSA (cheese bush)  
dominant annuals Pectocarya spp., Lepidium, Amelanchier, Chaenactis  
Phacelia spp.  
Adjacent Land Use: up to 1 mi \_\_\_\_\_  
Soils sandy loam, gravel & cobble  
Vegetation \_\_\_\_\_

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>
		Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>			
A=	J=	(inactive) / (active)		A=	J= Unk=

#1 WP 002 (BB)  
2 fresh scat (cat.)  
UTM-0559539  
3852149

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma Middens w/sign	Middens :w/o sign
					:	

#2 WP 003 (BB)  
0559509  
3852038  
2 fresh scat cat. 1

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN								
Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/Rifle Shells	Blading	Ravens	Other

#3 WP 004 (BB)  
0559383  
3851929  
2 fresh juv. scat

January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

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If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

M/D/Y  
Date 4/17/08  
Transect No. 90-433, 434, 435, 436  
State CA  
County San Bernardino  
City Barstow  
Recorder BB  
Address \_\_\_\_\_  
Project Name Solar 6  
Type of Project presence/absence  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 3/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. \_\_\_\_\_

\* Eastern  
200m  
not completed  
- 4/18/08 8:42

DESERT TORTOISE HANDBOOK 1992

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site | | Zone of Influence | | \_\_\_\_\_ ft from Project Site  
Transect Length: \_\_\_\_\_ ft Width: 30 ft Other \_\_\_\_\_ ft Time 1430  
Weather: Airtemp at: 5 cm \_\_\_\_\_ °C Surface \_\_\_\_\_ °C Cloud cover \_\_\_\_\_ %  
Rainfall \_\_\_\_\_ in Wind speed \_\_\_\_\_ Rainfall in last 30 days \_\_\_\_\_ in  
Land Form (e.g., mesa, bajada, wash) \_\_\_\_\_  
% Slope: high \_\_\_\_\_ low \_\_\_\_\_ Aspect \_\_\_\_\_ Elevation \_\_\_\_\_ ft  
Soils sandy loam  
Vegetation: Dominant perennials LAGR, AMDU (Ambrosia deltoidea)  
dominant annuals SZT ISMUS spp., cryptantha spp.

Adjacent Land Use: up to 1 mi \_\_\_\_\_  
Soils \_\_\_\_\_  
Vegetation \_\_\_\_\_

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>	Scats <sup>2</sup>	Shell Remains <sup>3</sup>
	A= J=	active inactive		A= J= Unk=
		11 111	M= F=	Unk=

inactive burrow - has scat inside

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma Middens w/sign	Middens :w/o sign
					:	

active burrow WP 005 (BB) dozen pieces of scat in/out 0559442 3850682

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/Rifle Shells	Blading	Ravens	Other

active burrow 2 WP 006 (BB) 0559496 3851022 fresh tracks inside

(place a 4 X 6 photograph showing the area where the transect was conducted)

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

M/D/Y  
Date 4/16/08  
Transect No. \_\_\_\_\_  
State CA  
County San Bernardino  
City \_\_\_\_\_  
Recorder Rachel Avila  
Address \_\_\_\_\_  
Project Name Solar 3  
Type of Project \_\_\_\_\_  
Desert Tortoise Survey  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name Solar 3  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
 $\frac{1}{4}$  Sec \_\_\_\_\_  $\frac{3}{4}$  Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. 3-57, 58, 59, 60

## FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site | | Zone of Influence | | \_\_\_\_\_ ft from Project Site  
Transect Length: 1400 ft Width: 30 ft 20 m Other \_\_\_\_\_ ft Time 13:17  
Weather: Airtemp at: 5 cm \_\_\_\_\_ °C Surface \_\_\_\_\_ °C Cloud cover \_\_\_\_\_ %  
Rainfall \_\_\_\_\_ in Wind speed \_\_\_\_\_ Rainfall in last 30 days \_\_\_\_\_ in  
Land Form (e.g., mesa, bajada, wash) \_\_\_\_\_  
% Slope: high \_\_\_\_\_ low ✓ Aspect \_\_\_\_\_ Elevation \_\_\_\_\_ ft  
Soils \_\_\_\_\_  
Vegetation: dominant perennials Atropis Lepiciva SSP,  
AMDU  
dominant annuals Chenacthus SSP, Lepidium SSP,  
Cryptantha SSP  
Adjacent Land Use: up to 1 mi Freeway, railroad.  
Soils \_\_\_\_\_  
Vegetation \_\_\_\_\_

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>	NUMBER OF	Scats <sup>2</sup>	Shell Remains <sup>3</sup>
A=	J=		M=	A=	J= Unk=
				F=	Unk=
Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma Middens w/sign :w/o sign
					:
=====					
SIGN'S OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN					
Tire Tracks	Human Footprints	Dog Sign	Trash Dump Sites	Shotgun/ Rifle Shells	Blading Ravens Other

January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

This form should be completed for those transects that contain one or more desert tortoise sign. After the project site and Zone of Influence have been surveyed for tortoise sign, the results from the transect forms should be compiled on a summary form.

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

0115

M/D/Y  
Date 4/18/00  
Transect No. \_\_\_\_\_  
State CA  
County San Bernardino  
City Ludlow  
Recorder Glen Kinoshita  
Address \_\_\_\_\_  
Project Name Solar 6  
Type of Project Ref. solar panel site  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 3/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. 6-509-510, 511, 512  
w/ Denise Th

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site X Zone of Influence 1 ft from Project Site  
Transect Length: 1000 ft Width: 30 ft Other \_\_\_\_\_ ft Time 9:17 am  
Weather: Airtemp at: 5 cm 74.5 °F Surface 78.8 °F Cloud cover 0 %  
Rainfall 0 in Wind speed 5 mph Rainfall in last 30 days \_\_\_\_\_ in  
Land Form (e.g., mesa, bajada, wash) bajada  
Slope: high \_\_\_\_\_ low X Aspect S-facing Elevation 2396 ft  
Soils sandy loam w/ rocks  
Vegetation: dominant perennials Larrea tridentata, Yucca elata, Yucca brevifolia, Yucca elata  
dominant annuals Schismus, Plantago

Adjacent Land Use: up to 1 mi radio tower, water ground pipeline, transmission line  
Soils same  
Vegetation same

TOTAL NUMBER OF

Corrected Sign	Live Tortoises Adult/Juv.	Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>	Scats <sup>2</sup>	Shell Remains <sup>3</sup>
A=	J=		M=	A= J= Unk= F= Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma Middens w/sign	Middens w/o sign
N	N	N	N			None

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/Rifle Shells	Blading	Ravens	Other
N	Y	Y	N	N	N	N	N	

(place a 4 X 6 photograph showing the area where the transect was conducted)

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

M/D/Y  
Date 4/18/08  
Transect No. \_\_\_\_\_  
State CA \_\_\_\_\_  
County San Bernadin \_\_\_\_\_  
City \_\_\_\_\_  
Recorder Rachel Aui \_\_\_\_\_  
Address \_\_\_\_\_  
Project Name Salax 6 \_\_\_\_\_  
Type of Project \_\_\_\_\_  
\_\_\_\_\_  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
 $\frac{1}{4}$  Sec \_\_\_\_\_  $\frac{1}{4}$  Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. 6-437, 438, 439, 440

## FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site | | Zone of Influence | | \_\_\_\_\_ ft from Project Site  
Transect Length: \_\_\_\_\_ ft Width: 30 ft Other \_\_\_\_\_ ft Time 9:52  
Weather: Airtemp at: 5 cm \_\_\_\_\_ °C Surface \_\_\_\_\_ °C Cloud cover 0 %  
Rainfall \_\_\_\_\_ in Wind speed \_\_\_\_\_ Rainfall in last 30 days \_\_\_\_\_ in  
Land Form (e.g., mesa, bajada, wash) \_\_\_\_\_  
% Slope: high \_\_\_\_\_ low ☒ Aspect \_\_\_\_\_ Elevation \_\_\_\_\_ ft  
Soils \_\_\_\_\_  
Vegetation: dominant perennials ~~KATR~~ AMPDU

dominant annuals Amsinckia L., Schismus

**Adjacent Land Use:** up to 1 mi

## Soils

## Vegetation

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>
		Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>			

A=	J=			A=	J=	Unk=
			M=	F=	Unk=	

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	<u>Neotoma</u> w/sign	Middens :w/o sign
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SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/ Rifle Shells	Blading	Ravens	Other
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January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

This form should be completed for those transects that contain one or more desert tortoise sign. After the project site and Zone of Influence have been surveyed for tortoise sign, the results from the transect forms should be compiled on a summary form.

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

M/D/Y  
Date 4/18/08  
Transect No. \_\_\_\_\_  
State CA  
County San Bernardino  
City \_\_\_\_\_  
Recorder Rachel Arly  
Address \_\_\_\_\_  
Project Name Solar 6  
Type of Project \_\_\_\_\_  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 3/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. G-401, 402, 403, 404

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site | | Zone of Influence | | \_\_\_\_\_ ft from Project Site  
Transect Length: 1990 ft Width: 30 ft Other \_\_\_\_\_ ft Time 1:31  
Weather: Airtemp at: 5 cm \_\_\_\_\_ °C Surface \_\_\_\_\_ °C Cloud cover 30 %  
Rainfall \_\_\_\_\_ in Wind speed \_\_\_\_\_ Rainfall in last 30 days \_\_\_\_\_ in  
Land Form (e.g., mesa, bajada, wash) \_\_\_\_\_  
% Slope: high \_\_\_\_\_ low / Aspect \_\_\_\_\_ Elevation \_\_\_\_\_ ft  
Soils \_\_\_\_\_  
Vegetation: dominant perennials LATR, FA, ANOU, AM, AMU  
AMDU  
dominant annuals Cryptantha, Schismus, AMS, MKIA  
SPP SPP SPP

Adjacent Land Use: up to 1 mi \_\_\_\_\_  
Soils \_\_\_\_\_  
Vegetation \_\_\_\_\_

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>
		Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>			
	A= J=			M= F=	A= J= Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma Middens w/sign	Middens w/o sign

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/Rifle Shells	Blading	Ravens	Other

1 active burrow with tracks  
025  
E 0558273  
N 38350101

way point 024  
Cat. 7 scats  
W 0558730  
N 3849903

January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

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If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

6715-6717

-1/GF, RK, KH, EK  
JJ

Date 2/20/92  
Transect No. \_\_\_\_\_  
State CA  
County San Bernardino  
City Bartow/Ludlow  
Recorder Glen Lindorff  
Address \_\_\_\_\_  
Project Name Solar 6  
Type of Project ph.  
Solar power site  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 1/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. 6-509, 6-510, 6-511, 6-512

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site X Zone of Influence \_\_\_\_\_ ft from Project Site  
Transect Length: \_\_\_\_\_ ft Width: 20 ft Other \_\_\_\_\_ ft Time 9:51 am 80 acres  
Weather: Airtemp at: 5 cm 68.8 °F Surface 64.6 °F Cloud cover 0 %  
Rainfall 0 in Wind speed 10-15 mph Rainfall in last 30 days \_\_\_\_\_ in  
Land Form (e.g., mesa, bajada, wash) \_\_\_\_\_  
Slope: high \_\_\_\_\_ low X ~ 8% Aspect SW Elevation 2355 ft  
Soils Sandy w/ rocks, cobbles  
Vegetation: dominant perennials Larrea tridentata, A. whorsia dumosa, Krameria sp.  
dominant annuals Amaranthus, Solanum, Plantago  
Adjacent Land Use: up to 1 mi radio tower, underground pipelines  
Soils Sand  
Vegetation Sand

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>
		Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>			
A=	J=			M=	F=
Tracks Eggshell Fragments Drinking Sites Courtship Rings Other Neotoma Middens w/sign :w/o sign					

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN							
Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/Rifle Shells	Blading	Ravens Other

total 5 tortoises

Immature: 10-12 cm w/ TORT 1 561241, 3846094 6721 (burrow at game site) (?)  
15 cm TORT 2 561391, 3847042 6722 (burrow at game site) male  
18 cm TORT 3 561654, 3846832 (in burrow, saw before going underground)  
w/ TORT 4 561707, 3846832 6723 (in burrow - appears to be juv) female(?)



January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

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If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

M/D/Y  
Date 5/6/92  
Transect No. \_\_\_\_\_  
State CA  
County San Bernardino  
City Barstow/Landow  
Recorder Glenn Kinsch  
Address \_\_\_\_\_  
Project Name Spade  
Type of Project Pat. Study  
Parus GDC  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 3/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. 6405, 406 402, 400  
w/ Jett Johnson, Denise Ty

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site X Zone of Influence \_\_\_\_\_ ft from Project Site  
Transect Length: 1900 ft Width: 80 ft Other \_\_\_\_\_ ft Time 2:00 pm  
Weather: Airtemp at: 5 cm 79.5 °F Surface 102.0 °F Cloud cover 5 %  
Rainfall 0 in Wind speed 7-10 mph Rainfall in last 30 days 0 in  
Land Form (e.g., mesa, patjada, wash) \_\_\_\_\_  
% Slope: high \_\_\_\_\_ low X Aspect \_\_\_\_\_ Elevation 2150 ft  
Soils Sandy loam w/ rocks  
Vegetation: dominant perennials Larrea tridentata, Ambrosia maritima, Hillaria rigida  
dominant annuals Amaranthus, Malvastrum, Schizanthus

Adjacent Land Use: up to 1 mi Transmission lines, underground pipeline, house  
Soils Sand  
Vegetation Sage

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>
		Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>			
A=	J=			M=	A= J= Unk= F= Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma Middens w/sign	Middens w/o sign

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/ Rifle Shells	Blading	Ravens	Other
			Y	N				

January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

This form should be completed for those transects that contain one or more desert tortoise sign. After the project site and Zone of Influence have been surveyed for tortoise sign, the results from the transect forms should be compiled on a summary form.

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

0317

M/D/Y  
Date 6/1/92  
Transect No. \_\_\_\_\_  
State CA  
County San Bernardino  
City Buckhorn/Lindero  
Recorder Glen Kumpsholtz  
Address \_\_\_\_\_  
Project Name Galack  
Type of Project Def. Subr  
power line  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 1/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. 6-441,342,443,444

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site X Zone of Influence \_\_\_\_\_ ft from Project Site  
Transect Length: \_\_\_\_\_ ft Width: 30 ft Other \_\_\_\_\_ ft Time 11:45  
Weather: Airtemp at: 5 cm 92 °F Surface 96.3 °F Cloud cover 0 %  
Rainfall 0 in Wind speed 6-8 mph Rainfall in last 30 days \_\_\_\_\_ in  
Land Form (e.g., mesa, bajada, wash) \_\_\_\_\_  
Slope: high \_\_\_\_\_ low X Aspect \_\_\_\_\_ Elevation 2205 ft  
Soils Sandy loam w/ rocks  
Vegetation: dominant perennials Larrea tridentata, Hilaria rigida  
dominant annuals Penstemon deltoides, Malva cathartica, Cryptantha, Schismus  
Adjacent Land Use: up to 1 mi house, transmission lines  
Soils same  
Vegetation same

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>			
		Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>			A=	J=	Unk=	

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma Middens w/sign	Middens w/o sign

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/Rifle Shells	Blading	Ravens	Other
Y	Y	N	Y	Y	N	N	X	

Approx 40% of site is disturbed by residence - lots of trash

January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

This form should be completed for those transects that contain one or more desert tortoise sign. After the project site and Zone of Influence have been surveyed for tortoise sign, the results from the transect forms should be compiled on a summary form.

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

DLZB

M/D/Y  
Date 5/5/08  
Transect No. \_\_\_\_\_  
State CA  
County San Bernardino  
City Redlow  
Recorder Glen K. Hoshika  
Address \_\_\_\_\_  
Project Name Solar 6  
Type of Project Pat.  
Solar power site  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 1/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. 6-529, 530, 531, 532

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site X Zone of Influence 1 ft from Project Site  
Transect Length: 1900 ft Width: 30 ft Other \_\_\_\_\_ ft Time 1:15 pm  
Weather: Airtemp at: 5 cm 80.8 °F Surface 84.5 °F Cloud cover \_\_\_\_\_ %  
Rainfall 0 in Wind speed 1-3 Rainfall in last 30 days \_\_\_\_\_ in  
Land Form (e.g., mesa, bajada, wash) \_\_\_\_\_  
% Slope: high \_\_\_\_\_ low X Aspect S facing Elevation 2457 ft  
Soils gray loam w/ rocks  
Vegetation: dominant perennials Larrea tridentata, Ambrosia dumosa  
dominant annuals Amorpha canescens, Schizanthus

Adjacent Land Use: up to 1 mi underground pipeline, transmission line  
Soils same  
Vegetation same

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>	Scats <sup>2</sup>	Shell Remains <sup>3</sup>	
A=	J=	<del>     </del> M=	A=	J= Unk=	
Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma Middens w/sign :w/o sign

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/Rifle Shells	Blading	Ravens	Other
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January 1992

(place a 4 X 6 photograph showing the area where the transect was conducted)

This form should be completed for those transects that contain one or more desert tortoise sign. After the project site and Zone of Influence have been surveyed for tortoise sign, the results from the transect forms should be compiled on a summary form.

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

0277

M/D/Y  
Date 5/5/08  
Transect No. \_\_\_\_\_  
State CA  
County San Bernardino  
City Ludlow  
Recorder Glen Kinsler  
Address \_\_\_\_\_  
Project Name Solar 6  
Type of Project power site  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
1/4 Sec \_\_\_\_\_ 3/4 Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. 6-525, 526, 527, 528

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site ☒ Zone of Influence \_\_\_\_\_ ft from Project Site  
Transect Length: 1400 ft Width: 30 ft Other \_\_\_\_\_ ft Time 9:30 am  
Weather: Airtemp at: 5 cm 70.0 °F Surface 69.8 °F Cloud cover 5 %  
Rainfall 0 in Wind speed 4-8 mph Rainfall in last 30 days \_\_\_\_\_ in  
Land Form (e.g., mesa, bajada wash) \_\_\_\_\_  
% Slope: high \_\_\_\_\_ low X Aspect S Elevation 2489 ft  
Soils sandy loam w/ rocks  
Vegetation: dominant perennials Larrea tridentata, Krameria grayi, Anemone dumosa  
dominant annuals Amsinckia lesselata, schismus

Adjacent Land Use: up to 1 mi transmission line, underground pipeline  
Soils same  
Vegetation same

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>
		Shelter Sites Pallet/Burrow/Den Active/Inactive <sup>1</sup>			
A=	J=			M=	A= J= Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma Middens w/sign	Middens w/o sign
					:	

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/ Rifle Shells	Blading	Ravens	Other
Y		N		N		N		N

(place a 4 X 6 photograph showing the area where the transect was conducted)

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

0315

M/D/Y  
Date 5/6/08  
Transect No. \_\_\_\_\_  
State CA  
County San Bernardino  
City Pomona  
Recorder Glen Kindrich  
Address \_\_\_\_\_  
Project Name Solar 6  
Type of Project Pol. Solar  
power site  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
 $\frac{1}{4}$  Sec \_\_\_\_\_  $\frac{1}{4}$  Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. 6465, 4466, 467, 468

## FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site X | Zone of Influence | |        ft from Project Site  
Transect Length: 19.00 ft Width: 30 ft Other        ft Time 9:30 am  
Weather: Airtemp at: 5 cm 75.8 °F Surface 75.0 °F Cloud cover 0 %  
Rainfall 0 in Wind speed 6-8 mph Rainfall in last 30 days 0 in  
Land Form (e.g., mesa, bajada, wash)         
% Slope: high        low X Aspect        Elevation 2227 ft  
Soils         
Vegetation: dominant perennials Amorpha canescens, Larrea tridentata

dominant annuals Amorcania, Sedum

Adjacent Land Use: up to 1 mi +var 5m mission line

Soils 99mc

Vegetation Same

Corrected Sign	Live Tortoises Adult/Juv.	TOTAL NUMBER OF		Scats <sup>2</sup>	Shell Remains <sup>3</sup>
		Shelter Pallet/Burrow/Den Active/Inactive <sup>1</sup>			
A=	J=		<del>     </del>	M=	A= J= Unk=
				F=	Unk=

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	Neotoma w/sign	Middens :w/o sign
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SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks	Human Footprints	Dog Sign	Trash	Dump Sites	Shotgun/ Rifle Shells	Blading	Ravens	Other
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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466
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(place a 4 X 6 photograph showing the area where the transect was conducted)

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

M/D/Y  
Date 5/7/06 (31)  
Transect No. 6-449-6-500 +  $\frac{1}{2}$  section  
State CA for land  
County San Bernardino  
City Rancho  
Recorder Jeff Johnson  
Address \_\_\_\_\_  
Project Name SES  
Type of Project Solar  
Quad Name \_\_\_\_\_  
Scale \_\_\_\_\_  
Site Name \_\_\_\_\_  
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_  
 $\frac{1}{4}$  Sec \_\_\_\_\_  $\frac{1}{4}$  Sec \_\_\_\_\_  
UTM Zone \_\_\_\_\_  
Northing \_\_\_\_\_  
Easting \_\_\_\_\_  
Parcel No. \_\_\_\_\_

u/ David Tr

## FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site | Zone of Influence | | ft from Project Site  
Transect Length: 235 m ft Width: 30 ft Other \_\_\_\_\_ ft Time 11:15 am  
Weather: Airtemp at: 5 cm 90 °F Surface 87 °F Cloud cover 0 %  
Rainfall 0 in Wind speed 12-15 mph Rainfall in last 30 days \_\_\_\_\_ in  
Land Form (e.g., mesa, bajada, wash) hills and bajada slopes  
% Slope: high X low \_\_\_\_\_ Aspect \_\_\_\_\_ Elevation \_\_\_\_\_ ft  
Soils sandy to igneous rock  
Vegetation: dominant perennials *Larrea tridentata*  
*Aleurophis rigidus*  
dominant annuals *Amorpha canescens*

Adjacent Land Use: up to 1 mi *Bj m*

Soils *Sandy*

Vegetation Larrea/olepurophils

		TOTAL		NUMBER		OF	
Corrected	Live	Shelter Sites		Scats	Shell		
Sign	Tortoises	Pallet/Burrow/Den			Remains		
	Adult/Juv.	Active/Inactive					
A=	J=			A=	J=	Unk=	
				M=	F=	Unk=	

Tracks	Eggshell Fragments	Drinking Sites	Courtship Rings	Other	<u>Neotoma</u> w/sign	Middens :w/o sign
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[illegible]

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